

December

Quarterly

25 Cents

AMAZING STORIES

HUGO GERNSBACH
EDITOR



Stories by
Jules Verne
H. G. Wells
Miles J. Breuer, M.D.



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real actual work . . . building real structures . . . winding real motors, dynamos and generators, wiring houses, etc., etc. That's a glimpse of how we make you a master practical electrician in 90 days, teaching you far more than the average ordinary electrician ever knows and fitting you to step into jobs leading to big pay immediately after graduation. Here, in this world-famous Percival school—and nowhere else in the world—can you get such training!

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Many times in the old days, while I trudged home after work to my car, I used to gaze wistfully at the shiny new gliders by me, the prosperous men and women who had. Later did I think that surely of a year, I, too, should have my own car, a decent bank account, the good things of life that make it worth living.

I Thought Success Was For Others

*Believe It Or Not, Just Twelve Months Ago
I Was Next Thing To "Down-and-Out"*

TODAY I am sole owner of the finest growing Radio store in town. And I am on good terms with my banker, too—more like the old days—only a year ago, when when I didn't have one dollar to knock against another in my pocket. My wife and I live in the snugest little home you ever saw, right in one of the best neighborhoods. And so thank that a year ago I used to dodge the landlady when she came to collect the rent for the little bedroom I called "home."

It all seems like a dream now, as I look back over the past twelve short months, and think how discouraged I was then, at the "end of a blind alley." I thought I never had had a good chance in my life, and I thought I never would have one. But it was waking up that I needed, and here's the story of how I got it.

I WAS a clerk, working at the usual miserable salary with job pay. Somehow I've never found any way to get into a line where I could make good money.

Other fellows seemed to find opportunities. But—much as I wanted the good things that go with success and a decent income—all the really well-paid vacancies I ever heard of seemed to be out of my line. I could call for some kind of knowledge I didn't have.

And I wanted to get married. A fine situation, wasn't it? My wife would have agreed to try it—but it wouldn't have been fair to her.

Mary had told me, "You can't get ahead where you are. Why don't you get into another line of work, somewhere that you can advance?"

"There's fine, Mary," I replied, "but where? I've always got my eye open for a better job, but I never seem to hear of a really good job that I can handle." Mary didn't seem to be satisfied with the answer, but I didn't know what else to tell her.

It was on the way home that night that I stopped off in the neighborhood drug store, where I worked a string of conventions about myself. A few business words that were the cause of the burning point in my life.

With a hot flash of shame I turned and left the store, and walked rapidly home. So that was what my neighbors—the people who knew me best—really thought of me!

"Hearken, neighbor!—look here, that suit fits," one fellow had said in a low voice. "But he hasn't got a dollar in those pockets!" "Oh, it's just 'Olden' Anderson," said another. "He's got a suit—some where his back—here ought to be."

As I thought over the words in disappointment, a sudden thought made me catch my breath. Who had Mary been so disappointed with my answer that I hadn't had a chance? Had Mary correctly about that? And after all, wasn't it true that I had a "suit—some" where my back—here ought to be? Wouldn't that why I never had a "chance" to get ahead? It was true, only too true—and it had taken this cruel blow to my self-esteem to make me see it.

With a new determination I thumbed the pages of a magazine as the table, searching for an advertisement that I'd seen many times that passed up without checking, an advertisement telling of big opportunities for trained men to succeed in the great new Radio field. With the advertisement was a coupon offering a big free book full of information. I tore the coupon in, and in a few days received a handsome 48-page book, printed in two colors, telling all about the opportunities in the Radio field and how a man can prepare quickly and easily at home to take advantage of these opportunities. I read the book carefully, and when I finished it I made my decision.

WHAT happened in the twelve months after this day, as I've already told you some places like a dream to me now. For ten of these twelve months, I've had a Radio business of my own! As first, of course, I started it as a little preparation as the side, under the guidance of the National Radio Institute, the outfit that gave me my Radio training. It wasn't long before I was getting so much to do on the Radio line that I quit my measly little clerical job, and devoted my full time to my Radio business.

Since that day I've gone right on up, always under the watchful guidance of my friends at the National Radio Institute. They would have given me just as much help, too, if I had wanted to follow some other line of Radio besides building my own retail business—such as broadcasting, merchandising, experimenting and operat-

ing, or any one of the score of lines they propose to me. And so think that until that day I spent for their eye-opening book, I'd been waiting "I never had a chance!"

NOW I'm making real money. I drive a new four-door car of my own. Mary and I don't own the house in full yet, but I've made substantial down payments, and I'm not straining myself any to meet the installments.

Here's a real tip. You may not be as bad off as I was. But, think it over—are you satisfied? Are you making enough money to work that you like? Would you sign a contract to stay where you are now for the next ten years, making the same money? If not, you'd better be doing something about it instead of drifting.

The new Radio game is a live-wire field of golden rewards. The work, in any of the 10 different lines of Radio, is fascinating, absorbing, well paid. The National Radio Institutes and largest Radio home-study school in the world—will train you independently in your own home to know Radio from A to Z and to increase your earnings in the Radio field.

Take number 10—No matter what your plans are, no matter how much or how little you know about Radio—clip the coupon below and look their free book over. It is filled with interesting facts, figures, and photos, and the information it will give you is worth a few minutes of anybody's time. You will place yourself under no obligation—the book is free, and is gladly sent to anyone who wants to know about Radio. Just address J. E. Smith, President, National Radio Institute, Dept. P-5, Washington, D. C.

J. E. SMITH, President,
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AMAZING STORIES

THE MAGAZINE OF SCIENTIFICTION

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Extravagant Fiction Today - - - - - Cold Fact Tomorrow

STRANGE FACTS

By HUGO GERNSBACH

IT is a part and parcel of the makeup of the average human to be most irritated by something that is unknown to him. If we traced this feeling to its last, we would perhaps have need of a psychologist for the ultimate explanation. It will usually be found that the more pressing the person in question the greater the irritation. This type of person is usually easily offended because it seems as though to his mentality that a certain fact exists anywhere in the universe of which he has no knowledge. Often, also, the more highly educated a person is, the greater the irritation. Thus, when a scientist comes along with something totally unorthodox—some new fact which may not be discernible as fact immediately—his fellow scientists are usually the ones who become most irritated and lead in their denunciations. Thus it was with Galileo, when he attempted to prove that the earth did not stand still, but spun around on its axis—a tremendous point of "intolerance" in those days. It not only went against the grain and all known custom, but against the Church as well.

It was, and still is true in the case of Einstein and his Theory of Relativity. Most of these theories have been proven after many years of wrangling among scientists and mathematicians, yet even today most of them are considered doubtful.

This is true, also, of a certain class of *AMAZING STORIES* scientific readers, a class, by the way, which we are happy to state, seems to be on the increase. This class is always ready to roar and claw at any author who comes along with a new idea which, for the time being, may be contrary to fact, although it may still be within the realm of science. Usually when such a scientific story is published, the howl raised by this class of readers is long and loud, and most virulent. They give no quarter, and are loud in their denunciations, and go to great lengths in venting their opinions as to who such and such statements could never come true. Yet before the ink is dry, it has happened that a scientific production has become a fact. Unhappily, however, the Doubting Thomases are inclined to close their eyes and hands another every fact and glibly say, "We don't believe it anymore." The old story of "There ain't no such animal."

As has often been said, fact is stranger than fiction. If, for instance, we had published a scientific tale whereby a musician, just by waving his hands in the air, without any physical contacts of any kind, could produce the most beautiful music imaginable. I know right well that we would have been inundated with protests that such a thing is a physical impossibility. Indeed, every scientist could have given you dozens of good reasons why such a thing would

be entirely absurd, impossible, and just pure fiction. Nevertheless, in the current group of *Science and Imagination*, there is described the apparatus invented by L. Theremin, a young Russian who uses radio principles for his extraordinary new kind of music.

In front of him stands a box containing certain radio instruments. From the top of the box issues a rod, while at the left hand of the box is a brass ring. Just by waving his hands in the vicinity of the rod and ring, Mr. Theremin produces the music as well as the most beautiful kind of music that has ever been produced. The effect of the body capacity of the human being is responsible for the music and anyone can learn to play the instrument in short order, producing his own music. The instrument gives forth electric or radio sounds of the most exquisite beauty.

A similar instrument, by the way, was used about two years ago, in my so-called *Phantom*, an instrument using 24 radio vacuum tubes, which I operate by means of an ordinary piano keyboard, while the music comes from the loud speaker the same as does the music of Theremin. Both instruments are based upon the same principle, except where I use an actual keyboard. Theremin uses his hands, which now act as an electric condenser. Otherwise the principle of the two apparatuses is the same.

Then again, if one of our scientific authors had glibly told us the horror and destruction that could be wrought by sound waves that could not be heard by the human ear, we would probably have promptly heard from amateur scientists and others. Yet, at a demonstration before the National Academy of Sciences, by Professor R. W. Wood of Johns-Hopkins University, this scientist produced the most astounding results with super sound waves, totally invisible to the human ear. These sound waves, for instance, when active upon cracked ice, broke the ice to pieces in short order and snow resulted. A fish in a glass bowl, when subjected to these silent sound waves, is killed within several minutes. An ordinary candle, suspended in water, and influenced through the super sound waves, is shaken into powder and the water becomes a white milky fluid.

Stranger yet, if two metal plates separated by a quartz disc, and connected to the super sound wave instrument, are placed in a beaker, the latter filled with oil, there is created a sort of mound, while the oil will form a little mountain and stay that way, so long as the super sound waves are turned on. Not only that, but the top of the liquid oil mound will readily support a weight of 5 ounces at its crest. All these are facts, much stranger than fiction, and most of them have never even been read or imagined by the average scientific writer. If he had imagined them, and written his imagination, he would probably have been quickly derided or worse.

Mr. Hugo Gernsback speaks every Tuesday at 9:30 P. M. from WFRY on various scientific and radio subjects.

ROBUR THE CONQUEROR *or* THE CLIPPER OF THE CLOUDS *by Jules Verne*

Editor of "A Trip to the Center of the Earth," "Off on a Comet," etc.



The Albatross continued her descent, showing her accented screw, and manifesting her speed as an act to leave the train behind. She flew about it like an enormous hawk or a gigantic bird of prey. She heaved to right and left, and swept on its beam, and bent behind.

CHAPTER I

MYSTERIOUS SOUNDS

BANG! Bang!"

The pistol shots were almost simultaneous. A cow peacefully grazing fifty yards away received one of the bullets in her back. She had nothing to do with the quarrel at all the same.

Neither of the adversaries was hit.

Who were these two gentlemen? We do not know, although this would be an excellent opportunity to hand down their names to posterity. All we can say is that the elder was an Englishman and the younger an American, and both of them were old enough to know better.

So far as recording in what locality the inoffensive ruminant had just tasted her last tuft of herbage, nothing could be easier. It was on the left bank of Niagara, not far from the suspension bridge which joins the American to the Canadian bank three miles from the falls.

The Englishman stepped up to the American.

"I contend, nevertheless, that it was 'Rule Britannia!'"

"And I say it was 'Yankee Doodle!'" replied the young American.

The dispute was about to begin again when one of the seconds—doubtless in the interests of the milk trade—interposed.

"Suppose we say it was 'Rule Doodle!' and 'Yankee Britannia,' and adjourn to breakfast?"

This compromise between the national aims of Great Britain and the United States was adopted to the general satisfaction. The Americans and Englishmen walked up the bank of the Niagara on their way to Goat Island, the neutral ground between the falls. Let us leave them in the presence of the boiled eggs and traditional hunt, and floods enough of tea to make the cataract jealous, and trouble ourselves no more about them. It is extremely unlikely that we shall again meet with them in this story.

Which was right, the Englishman or the American? It is not easy to say. Anyhow the duel shows how great was the excitement, not only in the new but also in the old world, with regard to an inexplicable phenomenon which for a month or more had driven everybody to distraction.

Never had the sky been so much looked at since the appearance of man on the terrestrial globe. The night before an aerial trumpet had blared its brazen notes through space immediately over that part of Canada between Lake Ontario and Lake Erie. Some people had heard these notes as "Yankee Doodle," others had heard them as "Rule Britannia," and hence the quarrel between the Anglo-Saxons, which ended with the breakfast on Goat Island. Perhaps it was neither one nor the other of these patriotic tunes, but what was undoubted by all was that these extraordinary sounds had seemed to descend from the sky to the earth.

What could it have been? Was it some exuberant aeronaut rejoicing on that sonorous instrument of which some "musicians" make such ostentatious use?

No! There was no balloon and there were no aeronauts. Some strange phenomenon had occurred in the higher zones of the atmosphere, a phenomenon of which neither the nature nor the cause could be

explained. To-day it appeared over America; forty-eight hours afterwards it was over Europe; a week later it was in Asia over the Colonial Empire.

Hence in every country of the world—empire, kingdom, or republic—there was anxiety which it was important to allay. If you hear in your house strange and inexplicable noises, do you not at once endeavor to discover the cause? And if your search is in vain, do you not leave your house and take up your quarters in another? But in this case the house was the terrestrial globe! There are no means of leaving that house for the moon, or Mars, or Venus, or Jupiter, or any other planet of the solar system. And so of necessity we have to find out what it is that takes place, not in the infinite void, but within the atmospherical zones. In fact, if there is no air there is no noise, and as there was a noise—that famous trumpet, to wit—the phenomenon must occur in the air, the density of which invariably diminishes, and which does not extend for more than some miles round our sphere.

Naturally the news-

papers took up the question in their thousands, and treated it in every form, throwing on it both light and darkness, recording many things about it true or false, alarming and tranquilizing their readers—as the sale required—and almost driving ordinary people mad. At one blow party politics dropped un-

"**ROBUR THE CONQUEROR**" was issued in 1895, coincident with the earliest practical interest which began to stir the world in regard to the "trumpet of the air." With his usual boldly scientific imagination Verne, having studied the question thoroughly from all sides, looked into the future, formed a judgment, and foretold the conquering air machine in the style he believed most likely to achieve success.

In his periodical *Revue* Verne declares that Robur is "the spirit of the future," and it is true that even to-day we can build no machine to match the "Albatross." We have, however, for substantiated the historical account of aviation which Verne gives us in the course of his story, and which necessarily opens with the early "lighters." The experiments of Professor Langley in Washington in 1890 opened the world on to a new knowledge of the laws of flight. Since then Count Zeppelin's and others' attempts in the "lighter than air" machines, and the Wright brothers and a hundred others in their "heavier than air" have achieved results which exceed any but Verne's already had even dreamed of, when he wrote "Robur the Conqueror."

It is interesting to note that for many years after the publication of Verne's ideas, the contest between the two schools, the lighter-than-air, and the heavier-than-air, has been raging. The Zeppelins in the meanwhile had their say, while the airplane adherents had theirs. Yet it should be noted that it is most likely that a machine of the Verne type will in the end prevail. The lighter-than-air machines of the Zeppelin type will probably never be used commercially in any great extent, due to their exceedingly high cost, for one thing, and, second, due to the difficulty in navigating these huge monsters of the air. As for Verne's still more radically "heavy" ship, sustained aloft by the direct lift of her screws, nothing in the least practical has as yet been achieved in that line.

Nearly twenty years after writing "Robur," Jules Verne turned again to the same theme, and in 1915, the very year of his death, his faithful publisher, the *Maurois*, issued "The Master of the World." This is a sequel to "Robur the Conqueror," and will be published by us immediately after "Robur." The sequel clearly evidences that the intensive power of the aged master and his skill in conceiving and portraying a dramatic drama remained unimpaired even to the end.

For the background of this story, Verne returns chiefly to the region of Lake Erie and Niagara, the tremendous cataract which had so impressed him in his visit to it nearly forty years before, and which he had described in "The Floating City."

headed—and the affairs of the world went on none the worse for it.

But what could this thing be? There was not an observatory that was not applied to. If an observatory could not give a satisfactory answer, what was the use of observatories? If astronomers, who doubled and tripled the stars a hundred thousand million miles away, could not explain a phenomenon occurring only a few miles off, what was the use of astronomers?

The observatory at Paris was very guarded in what it said. In the mathematical section they had not thought the statement worth noticing, in the meridional section they knew nothing about it; in the physical observatory they had not come across it; in the geodetic section they had had no observation; in the meteorological section there had been no record; in the calculating room they had had nothing to deal with. At any rate the confession was a frank one, and the same frankness characterized the replies from the observatory of Montsouris and the magnetic station in the park of St. Maur. The same respect for the truth distinguished the Bureau des Longitudes.

The provinces were slightly more affirmative. Perhaps in the night of the fifth and morning of the sixth of May there had appeared a flash of light of electrical origin which lasted about twenty seconds. At the Pic du Midi this light appeared between nine and ten in the evening. At the Meteorological Observatory on the Puy de Dome the light had been observed between one and two o'clock in the morning; at Mont Ventoux in Provence it had been seen between two and three o'clock; at Nice it had been noticed between three and four o'clock; while at the Swiss Alps between Annecy, Le Bourget, and Le Loran, it had been detected just as the search was paling with the dawn.

Now it evidently would not do to disregard these observations altogether. There could be no doubt that a light had been observed at different places, in succession, at intervals, during some hours. Hence, whether it had been produced from many centers in the terrestrial atmosphere, or from one center, it was plain that the light must have traveled at a speed of over one hundred and twenty miles an hour.

In the United Kingdom there was much perplexity. The observatories were not in agreement. Greenwich would not consent to the proposition of Oxford. They were agreed on one point, however, and that was: "It was nothing at all!"

But, said one, "It was an optical illusion!" While the other contended that, "It was an acoustical illusion!" And so they disputed. Something, however, was, it will be seen, common to both. "It was an illusion."

Between the observatory of Berlin and the observatory of Vienna the discussion threatened to end in international complications; but Russia, in the person of the director of the observatory at Pulkova, showed that both were right. It all depended on the point of view from which they attacked the phenomenon, which, though impossible in theory, was possible in practice.

In Switzerland, at the observatory of Salets in the canton of Appenzel, at the Right, at the Gabels, in the passes of the St. Gotthard, at the St. Bernard, at the Jaller, at the Simplon, at Zurich, at Sondlick in

the Tyrolean Alps, there was a very strong disinclination to say anything about what nobody could prove—and that was nothing but reasonable.

But in Italy, at the meteorological stations on Venetia, on Etna, in the Casa Ingles, at Monte Cavo, the observers made no hesitation in admitting the materiality of the phenomenon, particularly as they had seen it by day in the form of a small cloud of vapor, and by night in that of a shooting star. But of what it was they knew nothing.

SCIENTISTS began at last to tire of the mystery, while they continued to disagree about it, and even to frighten the lowly and the ignorant, who, thanks to one of the wisest laws of nature, have formed, form, and will form the immense majority of the world's inhabitants. Astronomers and meteorologists would soon have dropped the subject altogether had not, on the night of the 26th and 27th, the observatory of Kautskien at Finmark, in Norway, and during the night of the 28th and 29th that of Isfjord at Spitzbergen—Norwegian one and Swedish the other—found themselves agreed in recording that in the center of an aurora borealis there had appeared a sort of huge bird, an aerial monster, whose structure they were unable to determine, but who, there was no doubt, was showering off from his body certain coruscates which exploded like bombs.

In Europe not a doubt was thrown on this observation of the stations in Finmark and Spitzbergen. But what appeared the most phenomenal about it was that the Swedes and Norwegians could find themselves in agreement on any subject whatever.

There was a laugh at the asserted discovery in all the observatories of South America, in Brazil, Peru, and La Plata, and in those of Australia at Sydney, Adelaide, and Melbourne; and Australian laughter is very catching.

To sum up, only one chief of a meteorological station ventured on a decided answer to this question, notwithstanding the sarcasms that his solution provoked. This was a Chinaman, the director of the observatory at Zi-Ka-Wey which rises in the center of a vast plateau less than thirty miles from the sea, having an immense horizon and wonderfully pure atmosphere. "It is possible," said he, "that the object was an airform apparatus—a flying machine!"

What nonsense!

But if the controversy was keen in the old world, we can imagine what it was like in that portion of the new of which the United States occupy so vast an area.

A Yankee, we know, does not waste time on the road. He takes the street that leads him straight to his end. And the observatories of the American Federation did not hesitate to do their best. If they did not hurt their objectives at each others' heads, it was because they would have had to put them back just when they most wanted to use them. In this much-disputed question the observatories of Washington in the District of Columbia, and Cambridge in Massachusetts, found themselves opposed by those of Dartmouth College in New Hampshire, and Ann Arbor in Michigan. The subject of their dispute was not the nature of the body observed, but the precise moment of its observation. All of them claimed to have seen it the same night, the same hour, the same minute, the same second, although the

trajectory of the mysterious voyager took it but a moderate height above the horizon. Now from Massachusetts to Michigan, from New Hampshire to Columbia, the distance is too great for this double observation, made at the same moment, to be considered possible.

Dudley at Albany, in the state of New York, and West Point, the military academy, showed that their colleagues were wrong by an elaborate calculation of the right ascension and declination of the aforesaid body.

But later on it was discovered that the observers had been deceived in the body, and that what they had seen was an aerolite. This aerolite could not be the object in question, for how could an aerolite blow a trumpet?

It was in vain that they tried to get rid of this trumpet as an acoustical illusion. The ears were no more deceived than the eyes. Something had assuredly been seen, and something had assuredly been heard. In the night of the 12th and 13th of May—a very dark night—the observers at Yale College, in the Sheffield Science School, had been able to take down a few bars of a musical phrase in D major, common time, which gave note for note, rhythm for rhythm, the chorus of the Chant du Départ.

"Good," said the Yankee wags "There is a French band well up in the air."

"But to joke is not to answer." Thus said the observatory at Boston, founded by the Atlantic Iron Works Society, whose opinions in matters of astronomy and meteorology began to have much weight in the world of science.

Then there intervened the observatory at Cincinnati, founded in 1870, on Mount Lookout, thanks to the generosity of Mr. Kilgour, and known for its micrometrical measurements of double stars. Its director declared with the utmost good faith that there had certainly been something, that a traveling body had shown itself at very short periods at different points in the atmosphere, but what were the nature of this body, its dimensions, its speed, and its trajectory, it was impossible to say.

It was then that a journal whose publicity is immense—the *New York Herald*—received the anonymous contribution hereunder.

"There will be in the recollection of most people the rivalry which existed a few years ago between the two heirs of the Begum of Raghinabad, the French doctor Sarrasin, in the city of Frankville, and the German engineer Schulze, in the city of Steeltown, both in the south of Oregon in the United States.

"It will not have been forgotten that, with the object of destroying Frankville, Herr Schulze launched a formidable engine, intended to beat down the town and annihilate it at a single blow.

"Still less will it be forgotten that this engine, whose initial velocity, as it left the mouth of the monster cannon had been erroneously calculated, had flown off at a speed exceeding by sixteen times that of ordinary projectiles—so about four hundred and fifty miles an hour—that it did not fall to the ground, and that it passed into an aerolitic stage, so as to circle for ever round our globe.

"Why should not this be the body in question?" Very ingenious, Mr. Correspondent of the *New York Herald*! but how about the trumpet? There was no trumpet in Herr Schulze's projectile!

So all the explanations explained nothing, and all the observers had observed in vain. There remained only the suggestion offered by the director of Zi-Ka-Wey. But the opinion of a Chinaman!

The discussion continued, and there was no sign of agreement. Then came a short period of rest. Some days elapsed without any object, aerolite or otherwise, being described, and without any trumpet notes being heard in the atmosphere. The body then had fallen on some part of the globe where it had been difficult to track it; into the sea, perhaps. Had it sunk in the depths of the Atlantic, the Pacific, or the Indian Ocean? What was to be said in this matter?

But then, between the 2nd and 9th of June, there came a new series of facts which could not possibly be explained by the unaided existence of a cosmic phenomenon.

In a week the Hamburgers at the top of St. Michael's Tower, the Turks on the highest minaret of St. Sophia, the Rouennais at the end of the metal spire of their cathedral, the Strasburgers at the summit of their minister, the Americans on the head of the Liberty statue at the entrance of the Hudson and on the Bunker Hill monument at Boston, the Chinese at the spike of the temple of the Four Hundred Gods at Canton, the Hindus on the sixteenth terrace of the pyramid of the temple at Tanjore, the San Pietroli at the cross of St. Peter's at Rome, the English at the cross of St. Paul's in London, the Egyptians at the apex of the Great Pyramid of Ghazeh, the Persians at the lightning conductor of the iron tower of the Exposition of 1889, a thousand feet high, all of them beheld a flag floating from some one of these inaccessible points.

And the flag was black, fringed with stars, and it bore a golden sun in its center.

CHAPTER II

Agreement Impossible

“AND the first who say the contrary——”
 “Indeed! But we will say the contrary so long as there is a place to say it in!”
 “And in spite of your threats——”
 “Mind what you are saying, Rat Pynn!”
 “Mind what you are saying, Uncle Prudent!”
 “I maintain that the screw ought to be behind!”
 “And so do we! And so do we!” replied half a hundred voices mingled into one.
 “No! It ought to be in front!” shouted Phil Evans.

“In front!” roared fifty other voices, with a vigor in no whit less remarkable.

“We shall never agree!”

“Never! Never!”

“Then what is the use of a dispute?”

“It is not a dispute! It is a discussion!”

One would not have thought so, to listen to the taunts, objections and vociferations which filled the lecture room for a good quarter of an hour.

The room was one of the largest in the Weldon Institute, the well-known club in Walnut Street, Philadelphia, Pennsylvania, U. S. A. The evening before there had been an election of a lamp-lighter, occasioning many public manifestations, noisy meetings, and even interchanges of blows, resulting in an effervescence which had not yet subsided, and which

would account for some of the excitement just exhibited by the members of the Weldon Institute. For this was merely a meeting of balloonists, discussing the burning question of the direction of balloons.

In this great saloon there were straggling, pushing, gesticulating, shouting, arguing, disputing, a hundred balloonists, all with their hats on, under the authority of a president, assisted by a secretary and treasurer. They were not engineers by profession, but simply amateurs of all that appertained to aerostatics, and they were amateurs in a fury, and especially foes of those who would oppose balloons, "apparatuses heavier than the air," flying machines, aerial ships, or what not. That these people might one day discover the method of guiding balloons is possible. There could be no doubt that their president had considerable difficulty in guiding them.

This president, well known in Philadelphia, was the famous Uncle Prudent, Prudent being his family name. There is nothing surprising in America in the qualificative uncle, since you can there be uncle without having either nephew or niece. There they speak of uncle as in other places they speak of father, though the father may have had no children.

Uncle Prudent was a paragon of consideration, and in spite of his name was well known for his audacity. He was very rich, and that is no drawback even in the United States; and how could it be otherwise when he owned the greater part of the shares in Niagara Falls? A society of engineers had just been founded at Buffalo for working the cataract. It seemed to be an excellent speculation. The seven thousand five hundred cubic meters that pass over Niagara in a second would produce seven millions of horse-power. This enormous power, distributed amongst all the workshops within a radius of three hundred miles, would return an annual income of three hundred million dollars, of which the greater part would find its way into the pocket of Uncle Prudent. He was a bachelor, he lived quietly, and for his only servant had his valet Pryocollin, who was hardly worthy of being the servant to so audacious a master.

Uncle Prudent was rich, and therefore he had friends, as was natural; but he also had enemies, although he was president of the club—among others all those who envied his position. Amongst his bitterest foes we may mention the secretary of the Weldon Institute.

This was Phil Evans, who was also very rich, being the manager of the Whedon Wash Company, an important manufactory, which makes every day five hundred movements equal in every respect to the Swiss workmanship. Phil Evans would have passed for one of the happiest men in the world, and even in the United States, if it had not been for Uncle Prudent. Like him he was in his forty-sixth year; like him, of variable health; like him of undoubted boldness. They were two men made to understand each other thoroughly, but they did not, for both were of extreme violence of character. Uncle Prudent was furiously hot; Phil Evans was abnormally cool.

And why had not Phil Evans been elected president of the club? The votes were exactly divided between Uncle Prudent and him. Twenty times there had been a scrutiny, and twenty times the ma-

jority had not declared for either one or the other. The position was embarrassing, and it might have lasted for the lifetime of the candidates.

One of the members of the club then proposed a way out of the difficulty. This was Jem Chip, the treasurer of the Weldon Institute. Chip was a confirmed vegetarian, a prescriber of all animal nourishment, of all fermented liquors, half a Massachusetts, half a Brahman. On this occasion Jem Chip was supported by another member of the club, William T. Forbes, the manager of a large factory where they made glasses by treating rags with sulphuric acid. A man of good standing was this William T. Forbes, the father of two charming girls—Miss Dorothy, called Doll, and Miss Martha, called Mat, who gave the tone to the best society in Philadelphia.

It followed, then, on the proposition of Jem Chip, supported by William T. Forbes and others, that it was decided to elect the president "on the center point."

This mode of election can be applied in all cases when it is desired to elect the most worthy; and a number of Americans of high intelligence are already thinking of employing it in the nomination of the President of the Republic of the United States.

On two boards of perfect whiteness a black line is traced. The length of each of these lines is mathematically the same, for they have been determined with as much accuracy as the base of the first triangle in a trigonometrical survey. That done, the two boards were erected on the same day in the center of the conference room, and the two candidates, each armed with a fine needle, marched towards the board that had fallen to his lot. The man who planted his needle nearest the center of his line would be proclaimed President of the Weldon Institute.

The operation must be done at once—no guide marks or trial shots allowed; nothing but accuracy of eye. The man must have a compass in his eye, as the saying goes; that was all.

Uncle Prudent stuck in his needle at the same moment as Phil Evans did his. Then there began the measurement to discover which of the two competitors had almost nearly approached the center.

Wonderful! Such had been the precision of the shots that the measures gave no appreciable difference. If they were not exactly in the mathematical center of the line, the distance between the needles was so small as to be invisible to the naked eye.

The meeting was much embarrassed.

Fortunately one of the members, Truck Milnor, insisted that the measurements should be remade by means of a rule graduated by the micrometric machine of M. Perrenex, which can divide a millimeter into fifteen hundred parts. This rule, dividing the fifteen-hundredths of a millimeter with a diamond splinter, was brought to bear on the lines, and on reading the divisions through a microscope the following were the results: Uncle Prudent had approached the center within less than six fifteen-hundredths of a millimeter. Phil Evans was within nine fifteen-hundredths.

And that is why Phil Evans was only secretary of the Weldon Institute, whereas Uncle Prudent was president. A difference of three fifteen-hundredths of a millimeter! And on account of it Phil Evans vowed against Uncle Prudent one of those hatreds which are none the less fierce for being latent.

CHAPTER III

A Visitor is Announced

THE many experiments made during this last quarter of the nineteenth century have given considerable impetus to the question of dirigible balloons. The cars furnished with propellers attached in 1852 to the aerostats of the elongated form introduced by Henry Giffard, the machines of Dupuy de Lôme in 1872, of the Tissandier brothers in 1883, and of Captains Krebs and Renard in 1884, yielded many important results. But if these machines, moving in a medium heavier than themselves, manœuvring under the propulsion of a screw, working at an angle to the direction of the wind, and even against the wind, to return to their point of departure, had been really "dirigible," they had only succeeded under very favorable conditions. In large covered halls their success was perfect. In a calm atmosphere they did very well. In a light wind of five or six yards a second they still moved. But nothing practical had been obtained. Against a miller's wind—nine yards a second—the machines had remained almost stationary. Against a fresh breeze—eleven yards a second—they would have advanced backwards. In a storm—twenty-seven to thirty-three yards a second—they would have been blown about like a feather. In a hurricane—sixty yards a second—they would have run the risk of being dashed to pieces. And in one of those cyclones which exceed a hundred yards a second not a fragment of them would have been left. It remained, then, even after the striking experiments of Captains Krebs and Renard, that though dirigible aerostats had gained a little speed, they could not be kept going in a moderate breeze. Hence the impossibility of making practical use of this mode of aerial locomotion.

With regard to the means employed to give the aerostat its motion a great deal of progress had been made. For the steam engines of Henry Giffard, and the muscular force of Dupuy de Lôme, electric motors had gradually been substituted. The batteries of bichromate of potassium of the Tissandier brothers had given a speed of four yards a second. The dynamo-electric machines of Captains Krebs and Renard had developed a force of twelve horsepower and yielded a speed of six and a half yards per second.

With regard to this motor, engineers and electricians had been approaching more and more to that desideratum which is known as a steam horse in a watch case. Gradually the results of the battery of which Captains Krebs and Renard had kept the secret had been surpassed, and aerostats had become able to rival themselves of motors whose lightness increased at the same time as their power.

In this there was much to encourage those who believed in the utilization of dirigible balloons. But yet how many good people there are who refuse to admit the possibility of such a thing! If the aerostat finds support in the air it belongs to the medium in which it moves; under such conditions, how can its mass, which offers so much resistance to the currents of the atmosphere, make its way against the wind?

In this struggle of the inventors after a light and powerful motor, the Americans had most nearly attained what they sought. A dynamo-electric apparatus, in which a new battery was employed, the com-

position of which was still a mystery, had been bought from its inventor, a Boston chemist up to then unknown. Calculations made with the greatest care, diagrams drawn with the utmost exactitude, showed that by means of this apparatus driving a screw of given dimensions a displacement could be obtained of from twenty to twenty-two yards a second.

Now this was magnificent!

"And it is not dear," said Uncle Prudent, as he handed to the inventor in return for his formal receipt the last instalment of the hundred thousand paper dollars he had paid for his invention.

Immediately the Weldon Institute set to work. When there comes along a project of practical utility the money leaps nimbly enough from American pockets. The funds flowed in even without its being necessary to form a syndicate. Three hundred thousand dollars came into the club's account at the first appeal. The work began under the superintendence of the most celebrated aerostat of the United States, Harry W. Tinder, immortalized by three of his ascents out of a thousand, one in which he rose to a height of twelve thousand yards, higher than Gay Lussac, Coxwell, Severt, Crocé-Spinelli, Tissandier, Glahéer; another in which he had crossed America from New York to San Francisco, exceeding by many hundred leagues the journeys of Nadar, Godard, and others, to say nothing of that of John Wise, who accomplished eleven hundred and fifty miles from St. Louis to Jefferson county; the third, which ended in a frightful fall from fifteen hundred feet at the cost of a slight sprain in the right thumb, while the less fortunate *Pilâtre de Rozier* fell only seven hundred feet, and yet killed himself on the spot!

At the time this story begins the Weldon Institute had got their work well in hand. In the Turner yard at Philadelphia there reposed an enormous aerostat, whose strength had been tried by highly compressed air. It well merited the name of the monster balloon.

How large was Nadar's Giant? Six thousand cubic meters. How large was John Wise's balloon? Twenty thousand cubic meters. How large was the Giffard balloon at the 1878 Exhibition? Twenty-five thousand cubic meters. Compare these three aerostats with the aerial machine of the Weldon Institute, whose volume amounted to forty thousand cubic meters, and you will understand why Uncle Prudent and his colleagues were so justifiably proud of it.

This balloon not being destined for the exploration of the higher strata of the atmosphere, was not called the *Racer*, a name which is rather too much held in honor among the citizens of America. No! It was called simply, the *Go-ahead*, and all it had to do was to justify its name by going ahead obediently to the wishes of its commander.

The dynamo-electric machine, made according to the patent purchased by the Weldon Institute, was nearly ready. In less than six weeks the *Go-ahead* would start for its first cruise through space.

But, as we have seen, all the mechanical difficulties had not been overcome. Many evenings had been devoted to discussing, not the form of its screw nor its dimensions, but whether it ought to be put behind, as the Tissandier brothers had done, or before as Captains Krebs and Renard had done. It is unnecessary to add that the partisans of the two systems had almost come to blows. The group of "Be-forists" were equaled in number by the group of

"Beholdians," Uncle Prudent, who ought to have given the casting vote—Uncle Prudent, brought up deadbeats in the school of Professor Buridan—could not bring himself to decide.

Hence the impossibility of getting the screw into place. The dispute might last for some time, unless the government interfered. But in the United States the government muddles with private affairs as little as it possibly can. And it is right.

Things were in this state at this meeting on the 13th of June, which threatened to end in a riot—in suits exchanged, fistfights succeeding the insults, cane thrashings succeeding the fistfights, revolver shots succeeding the cane thrashings—when at thirty-seven minutes past eight there occurred a diversion.

The porter of the Weldon Institute coolly and calmly, like a policeman amid the storm of the meeting, approached the presidential desk. On it he placed a card. He awaited the orders that Uncle Prudent found it convenient to give.

Uncle Prudent turned on the strain whistle, which did duty for the presidential bell, for even the Kremlin clock would have struck in vain! But the tumult slackened not.

Then the president removed his hat. Thanks to this extreme measure a semi-silence was obtained.

"A communication!" said Uncle Prudent, after taking a huge pinch from the snuff-box which never left him.

"Speak up!" answered eighty-nine voices, accidentally in agreement on this one point.

"A stranger, my dear colleagues, asks to be admitted to the meeting."

"Never!" replied every voice.

"He desires to prove to us, it would appear," continued Uncle Prudent, "not to believe in guiding balloons is to believe in the absurdity of Utopias!"

"Let him in! Let him in!"

"What is the name of this singular personage?" asked secretary Phil Evans.

"Rober," replied Uncle Prudent.

"Rober! Rober! Rober!" yelled the assembly. And the welcome accorded so quickly to the curious name was chiefly due to the Weldon Institute hoping to vent its exasperation on the head of him who bore it!

CHAPTER IV

In Which a New Character Appears

"CITIZENS of the United States! My name is Rober. I am worthy of the name! I am forty years old, although I look but thirty, and I have a constitution of iron, a healthy vigor that nothing can shake, a muscular strength that few can equal, and a digestion that would be thought first class even in an ostrich!"

They were listening! Yes! The riot was quelled at once by the totally unexpected fashion of the speech. Was this fellow a madman or a hoaxer? Whoever he was, he kept his audience in hand. There was not a whisper in the meeting in which but a few minutes ago the storm was in full fury.

And Rober looked the man he said he was. Of middle height and geometric breadth, his figure was a regular trapezoid with the greatest of its parallel sides formed by the line of his shoulders. On this line attached by a robust neck there rose an enormous spheroidal head. The head of what animal did it

resemble from the point of view of positional analogy? The head of a bull, but a bull with an intelligent face. Eyes which at the least opposition would glow like coals of fire; and above them a permanent contraction of the superciliary muscle, an invariable sign of extreme energy. Short hair, slightly woolly, with metallic reflections; large chest rising and falling like a smith's bellows; arms, hands, legs, feet, all worthy of the trunk. No mustaches, no whiskers, but a large American goatee, revealing the attachments of the jaw whose masseter muscles were evidently of formidable strength. It has been calculated—what has not been calculated?—that the pressure of the jaw of an ordinary crocodile can reach four hundred atmospheres, while that of a lion can only amount to one hundred. From this the following curious formula has been deduced.—If a kilogram of dog produces eight kilograms of masseteric force, a kilogram of crocodile could produce twelve. Now, a kilogram of the aforesaid Rober would not produce less than ten, so that he came between the dog and the crocodile.

From what country did this remarkable specimen come? It was difficult to say. One thing was noticeable, and that was that he expressed himself fluently in English without a trace of the drawing twang that distinguishes the Yankees of New England.

He continued: "And now, honorable citizens, for my mental facilities. You see before you an engineer whose nerves are in no way inferior to his muscles. I have no fear of anything or anybody. I have a strength of will that has never had to yield. When I have decided on a thing, all America, all the world, may strive in vain to keep me from it. When I have an idea I allow no one to share it, and I do not permit any contradiction. I insist on these details, honorable citizens, because it is necessary you should quite understand me. Perhaps you think I am talking too much about myself? It does not matter if you do! And now consider a little before you interrupt me, as I have come to tell you something that you may not be particularly pleased to hear."

A sound as of the surf on the beach began to rise along the first row of seats—a sign that the sea would not be long in getting stormy again.

"Speak, stranger!" said Uncle Prudent, who had some difficulty in restraining himself.

And Rober spoke as follows, without troubling himself any more about his audience.

"Yes! I know it well! After a century of experiments that have led to nothing, and trials proving no result, there still exist ill-balanced minds who believe in dirigible balloons. They imagine that a motor of some sort, electric or otherwise, might be applied to their pterodactyl skin bags which are at the mercy of every current in the atmosphere. They persuade themselves that they can be masters of an aerostat as they can be masters of a ship on the surface of the sea. Because a few inventors in calm or nearly calm weather have succeeded in working on an angle with the wind, or even going to windward in a gentle breeze, they think that the steering of aerial apparatus lighter than the air is a practicable matter. Well, now, look here: You hundred, who believe in the realization of your dreams, are throwing your thousands of dollars not into water but into space! You are fighting the impossible!"

Strange it was that at this affirmation the members of the Weldon Institute did not move. Had

they become as dead—they were patient? Or were they measuring themselves to see how far this audacious contrivance would dare to go?

Robur continued: "What? A balloon? When to obtain the raising of a couple of pounds you require a cubic yard of gas. A balloon pretending to resist the wind by aid of its mechanism, when the pressure of a light breeze on a vessel's sails is not less than that of four hundred horsepower; when in the accident at the Tay Bridge you saw the storm produce a pressure of eight and a half hundredweight on a square yard. A balloon, when on such a system nature has never constructed anything flying, whether furnished with wings like birds, or membranous like certain fish, or certain mammals!"

"Mammals!" exclaimed one of the members.

"Yes! Mammals! The bat, which flies, if I am not mistaken! Is the gentleman unaware that this flier is a mammal? Did he ever see an oriole's trade of bat's eggs?"

The interrupter reserved himself for future interruption, and Robur resumed: "But does that mean that man is to give up the conquest of the air, and the transformation of the domestic and political manners of the old world, by the use of this admirable means of locomotion? By no means. As he has become master of the seas with the ship, by the oar, the sail, the wheel, and the screw, so shall he become master of atmospheric space by apparatus heavier than the air—for it must be heavier to be stronger than the air!"

And then the assembly exploded. What a broadside of yells escaped from all these mouths, aimed at Robur like the musketry of so many guns! Was not this hurling a declaration of war into the very camp of the balloonists? Was not this a stirring up of strife between "the lighter" and "the heavier" than air?

Robur did not even frown. With folded arms he waited bravely till silence was obtained.

By a gesture Uncle Prudent ordered the firing to cease.

"Yes," continued Robur, "the future is for the flying machine. The air affords a solid fulcrum. If you will give a column of air an ascensional movement of forty-five meters a second, a man can support himself on the top of it if the soles of his boots have a superficies of only the eighth of a square meter. And if the speed be increased to ninety meters, he can walk on it with naked feet. Or if, by means of a screw, you drive a mass of air at this speed, you get the same result."

What Robur said had been said before by all the partisans of aviation, whose work slowly but surely is leading on to the solution of the problem. To Person d'Amécourt, La Landelle, Nadar, De Lury, De Lormet, Liak, Belaguir, Moeran, the brothers Richard, Rabinet, Jobert, Du Temple, Salves, Penand, De Villeneuve, Gaudot and Tatin, Michel Loup, Edison, Plancovertre, and so many others, belongs the honor of having brought forward ideas of such simplicity. Abandoned and resumed times without number, they are sure some day to triumph. To the enemies of aviation, who urge that the bird only sustains himself by warming the air he strikes, their answer is ready. Have they not proved that an eagle weighing five kilograms would have to fill fifty cubic meters with his warm fluid utterly to sustain himself in space?

This is what Robur demonstrated with undeniable logic amid the uproar that arose on all sides. And in conclusion these are the words he hurled in the faces of the balloonists: "With your balloons you can do nothing—you will arrive at nothing—you dare do nothing! The baldest of your aeronauts, John Wise, although he has made an aerial voyage of twelve hundred miles above the American continent, has had to give up his project of crossing the Atlantic! And you have not advanced a step—not one step—towards your end."

"Ser," and the president, who in vain endeavored to keep himself cool, "you forget what was said by our immortal Franklin at the first appearance of the fire balloon, 'It is but a child, but it will grow.' It was but a child, and it has grown."

"No, Mr. President, it has not grown! It has got fatter—and that is not the same thing!"

This was a direct attack on the Weldon Institute, which had decreed, helped, and paid for the making of a monster balloon. And so propositions of the following kind began to fly about the room: "Turn him out!" "Throw him off the platform!" "Prove that he is heavier than the air!"

BUT these were only words, not means to an end. Robur remained impassible, and continued: "There is no progress for your aerostats, my citizen balloonists; progress is for flying machines. The bird flies, and he is not a balloon, he is a piece of mechanism!"

"Yes, he flies!" exclaimed the fiery Bat-T Pynn; "but he flies against all the laws of mechanics!"

"Indeed!" said Robur, shrugging his shoulders, and resuming: "Since we have begun the study of the flight of large and small birds our simple idea has prevailed—to imitate nature, which never makes mistakes. Between the albatross, which gives hardly ten beats of the wing per minute, between the pelican, which gives seventy—"

"Seventy-one," said the voice of a scowler.

"And the bee, which gives one hundred and ninety-two per second—"

"One hundred and ninety-three!" said the facetious individual.

"And the common house fly, which gives three hundred and thirty—"

"And a half!"

"And the mosquito, which gives millions—"

"No, millions!"

But Robur, the interrupted, interrupted not his demonstration. "Between these different rates—," he continued.

"There is a difference," said a voice.

"There is a possibility of finding a practical solution. When De Lury showed that the stag beetle, an insect weighing only two grammes, could lift a weight of four hundred grammes, or two hundred times its own weight, the problem of aviation was solved. Besides, it has been shown that the wing surface decreases in proportion to the increase of the size and weight of the animal. Hence we can look forward to such contrivances—"

"Which would never fly!" said secretary Phil Evans.

"Which have flown, and which will fly," said Robur, without being in the least disconcerted, "and which we can call strophopters, helicopters, pteropters or, in imitation of the word 'net,' which comes

from 'navis,' or call them 'eis,' from 'avis,'—by means of which man will become the master of space. The helix——"

"Ah, the helix!" replied Phil Evans. "But the bird has no helix; that we know!"

"So," said Robur; "but Pterod has shown that in reality the bird makes a helix, and its flight is helioperal. And the motor of the future is the screw——"

"From such a malade
Saint Helix keep us free!"

sang out one of the members, who had accidentally hit upon the air from Herold's *Zampa*.

And they all took up the chorus:

"From such a malade
Saint Helix keep us free!"

with such intonations and variations as would have made the French composer groan in his grave.

As the last notes died away in a frightful discord Uncle Prudent took advantage of the momentary calm to say, "Stranger, up to now, we let you speak without interruption."

It seemed that for the president of the Weldon Institute shouts, yells, and catcalls were not interruptions, but only an exchange of arguments.

"But I may remind you, all the same, that the theory of aviation is condemned beforehand, and rejected by the majority of American and foreign engineers. It is a system which was the cause of the death of the Flying Saracen at Constantinople, of the monk Volador at Lisbon, of De Letum in 1852, of De Groof in 1864, besides the victims I forget since the mythological *leaves*——"

"A system," replied Robur, "no more to be condemned than that whole mythology contains the names of Pélée de Rouer at Calais, of Blanchard at Paris, of Donaldson and Grimwood in Lake Michigan, of Steel and of Crook-Spinell, and others whom it takes good care to forget."

This was a counter-thrust with a vengeance.

"Besides," continued Robur, "with your balloons as good as you can make them you will never obtain any speed worth mentioning. It would take you ten years to go round the world—and a flying machine could do it in a week!"

Here arose a new torrent of protests and denials, which lasted for three long minutes. And then Phil Evans took up the word.

"Mr. Aviator," he said, "you who talk so much of the benefits of aviation, have you ever aviated?"

"I have."

"And made the conquest of the air?"

"Not unlikely."

"Hooray for Robur the Conqueror!" shouted an ironical voice.

"Well, yes! Robur the Conqueror! I accept the name and I will bear it, for I have a right to it."

"We beg to doubt it!" said Jim Chip.

"Gentlemen," said Robur, and his brows knit, "when I have just seriously stated a serious thing I do not permit anyone to reply to me by a flat denial, and I shall be glad to know the name of the interrupter."

"My name is Chip, and I am a vegetarian."

"Citizen Chip," said Robur, "I knew that vegetarians had longer alimentary canals than other men

—a good foot longer at the least. That is quite long enough; and so do not compel me to make yours any longer by beginning at your ears and——"

"Throw him out!"

"Into the street with him!"

"Lynch him!"

"Helix him!"

The rage of the balloonists burst forth at last.

They rushed at the platform. Robur disappeared amid a sheet of hands that were thrown about as if caught in a storm. In vain the steam whistle screamed its fanfares over the assembly. Philadelphia might well think that a fire was devouring one of its quarters and that all the waters of the Schuylkill could not put it out.

Suddenly there was a recoil in the tumult. Robur had put his hands into his pockets, withdrawn them, and now held them out at the front ranks of the infuriated mob.

In each hand was one of those American institutions known as revolvers which the mere pressure of the fingers is enough to fire—pocket rattlers in fact.

And taking advantage not only of the recoil of his assailants but also of the silence which accompanied it,

"Decidedly," said he, "it was not Amerigo that discovered the New World, it was Cabot! You are not Americans, citizen balloonists! You are only Cabots——"

Four or five pistol shots cracked out, fired into space. They hurt nobody. Amid the smoke the engineer vanished; and when it had thinned away there was no trace of him. Robur the conqueror had flown, as if some apparatus of aviation had borne him into the air.

CHAPTER V

Another Disappearance

THIS was not the first occasion on which, at the end of their stormy discussions, the members of the Weldon Institute had filled Walnut Street and its neighborhood with their tumult. Several times had the substantial complaints of the noisy way in which the proceedings ended, and more than once had the policemen had to interfere to clear the thoroughfare for the passersby, who for the most part were supremely indifferent on this question of aerial navigation. But never before had the tumult attained such proportions, never had the complaints been better founded, never had the intervention of the police been more necessary.

But there was some excuse for the members of the Weldon Institute. They had been attacked in their own house. To these enthusiasts for "lighter than air" a no less enthusiastic for "heavier than air" had said things absolutely abhorrent. And at the moment they were about to treat him as he deserved, he had disappeared.

So they cried aloud for vengeance. To leave such insults unpunished was impossible to all with American blood in their veins. Had not the sons of Amerigo been called the sons of Cabot? Was not that an insult as unpardonable as it happened to be just—historically?

The members of the club in several groups rushed down Walnut Street, then into the adjoining streets,

and them all over the neighborhood. They woke up the householders; they compelled them to search their houses, prepared to indemnify them later on for the outrage on their privacy. Van were all their trouble and searching. Robur was nowhere to be found; there was no trace of him. He might have gone off in the Go-ahead, the balloon of the Institute, for all they could tell. After an hour's hunt the members had to give in and separate, not before they had agreed to extend their search over the whole territory of the twin Americas that form the new continent.

By eleven o'clock quiet had been restored in the neighborhood of Walnut Street. Philadelphia was able to sink again into that sound sleep which is the privilege of non-manufacturing towns. The different members of the club parted to seek their respective houses. To mention the most distinguished amongst them, William T. Fortes sought his large sugar establishment, where Miss Doll and Miss Mist had prepared for him his evening tea, sweetened with his own glucose. Truck Miffler took the road to his factory in the distant suburb, where the engines worked day and night. Treasurer Jean Chip, puffed by accused of possessing an elementary canal twelve inches longer than that of other men, returned to the vegetable soup that was waiting for him.

Two of the most important balloonists—two only—did not seem to think of returning so soon to their domicile. They availed themselves of the opportunity to discuss the question with more than usual acrimony. These were the irreconcilables, Uncle Prudent and Phil Evans, the president and secretary of the Walden Institute.

At the door of the club the valet Frycollin waited for Uncle Prudent, his master, and at last he went after him, though he cared but little for the subject which had set the two colleagues at loggerheads.

It is only by an euphemism that the verb "discuss" can be used to express the way in which the dust between the president and secretary was being performed. As a matter of fact they were in full wrangle with an energy born of their old rivalry.

"No, sir, no," said Phil Evans. "If I had had the honor of being president of the Walden Institute, there never, no, never, would have been such a scandal."

"And what would you have done, if you had had the honor?" demanded Uncle Prudent.

"I would have stopped the insult before he had opened his mouth."

"It seems to me it would have been impossible to stop him until he had opened his mouth," replied Uncle Prudent.

"Not in America, sir; not in America."

AND exchanging such observations, increasing in bitterness as they went, they walked on through the streets farther and farther from their houses, until they reached a part of the city whence they had to go a long way round to get back.

Frycollin followed, by no means at ease to see his master plunging into such deserted spots. He did not like deserted spots, particularly after midnight. In fact the darkness was profound and the moon was only a thin crescent just beginning its monthly life. Frycollin kept a lookout to the left and right of him to see if he was followed. And he fancied he could see five or six building fellows dogging his footsteps.

Instinctively he drew nearer to his master, but not for the world would he have dared to break in on the conversation of which the fragments reached him.

In short it was chance that the president and secretary of the Walden Institute found themselves on the road to Fairmount Park. In the full heat of their dispute they crossed the Schuylkill River by the famous iron bridge. They met only a few belated wayfarers, and pressed on across a wide open tract where the immense prairie was broken every now and then by the patches of thick woodland which make the park different from any other in the world.

There Frycollin's terror became acute, particularly as he saw the five or six shadows gliding after him across the Schuylkill bridge. The pupils of his eyes broadened out to the circumference of his iris, and his limbs seemed to diminish as if endowed with the contractility peculiar to the molluscs and certain of the articulates; for Frycollin, the valet, was an egregious coward.

He was a pure South Carolina negro, with the head of a fool and the carcass of an imbecile. Being only one and twenty, he had never been a slave, not even by birth, but that made no difference to him. Grinning and greedy and idle, and a magnificent poltroon, he had been the servant of Uncle Prudent for about three years. Over and over again had his master threatened to kick him out, but had kept him on for fear of doing worse. With a master ever ready to venture on the most audacious enterprises, Frycollin's cowardice had brought him many arduous trials. But he had some compensation. Very little had been said about his gluttony, and still less about his laziness.

Ah, Valet Frycollin, if you could only have read the future! Why, oh why, Frycollin, did you not remain at Boston with the Staffels, and not have given them up when they talked of going to Switzerland? Was not that a much more suitable place for you than this of Uncle Prudent's, where danger was daily welcomed?

But here he was, and his master had become used to his faults. He had one advantage, and that was a consideration. Although he was a negro by birth he did not speak like a negro, and nothing is so irritating as that hateful jargon in which all the pronouns are objective and all the verbs infinitive. Let it be understood, also that Frycollin was a thorough coward.

And now it was midnight, and the pale crescent of the moon began to sink in the west behind the trees in the park. The rays streaming fitfully through the branches made the shadows darker than ever. Frycollin looked around him anxiously. "Brer!" he said, "there are those fellows there all the time. Positively they are getting nearer! Master Uncle!" he shouted.

It was thus he called the president of the Walden Institute, and thus did the president desire to be called.

At the moment the dispute of the rivals had reached its maximum, and as they hurled their epithets at each other they walked faster and faster, and drew farther and farther away from the Schuylkill bridge. They had reached the center of a wide clump of trees, whose summits were just tipped by the parting rays of the moon. Beyond the trees was a very large clearing—an oval field, a complete amphitheater. Not a hillock was there to hinder the

gallop of the horses, not a hush to stop the view of the spectators.

And if Uncle Prudent and Phil Evans had not been so deep in their dispute, and had used their eyes as they were accustomed to, they would have found the clearing was not in its usual state. Was it a flour mill that had anchored on it during the night? It looked like it, with its wings and sails—motionless and mysterious in the gathering gloom.

But neither the president nor the secretary of the Weldon Institute noticed the strange modification in the landscape of Harbourside Park; and neither did Frycollin. It seemed to him that the thieves were approaching, and preparing for their attack; and he was seized with convulsive fear, paralyzed at his limbs, with every hair he could boast of on the bristle. His terror was extreme. His knees bent under him, but he had just strength enough to exclaim for the last time, "Master Uncle! Master Uncle!"

"What is the matter with you?" asked Uncle Prudent. Perhaps the dispirited would not have been sorry to have relieved their fury at the expense of the unfortunate vales. But they had no time; and neither even had he time to answer.

A whistle was heard. A flash of electric light shot across the clearing.

A signal, doubtless? The moment had come for the deed of violence! In less time than it takes to tell, six men came leaping across from under the trees, two upon Uncle Prudent, two upon Phil Evans, two upon Frycollin—there was no need for the two last, for the negro was incapable of defending himself. The president and secretary of the Weldon Institute, although taken by surprise, would have resisted.

They had neither time nor strength to do so. In a second they were rendered speechless by a gag, blind by a bandage, thrown down, pressed and carried bodily off across the clearing. What could they think except that they had fallen into the hands of people who intended to rob them? The people did nothing of the sort, however. They did not even touch Uncle Prudent's pockets, although, according to his custom, they were full of paper dollars.

Within a minute of the attack, without a word being passed, Uncle Prudent, Phil Evans, and Frycollin felt themselves laid gently down, not on the grass, but on a sort of plank that cracked beneath them. They were laid down side by side.

A door was shut; and the grating of a bolt in a staple told them that they were prisoners.

Then there came a continuous buzzing, a quivering, a letter with the air unending.

And that was the only sound that broke the quiet of the night.

Great was the excitement next morning in Philadelphia! Very early was it known what had passed at the meeting of the Institute. Everyone knew of the appearance of the mysterious engineer named Robur—Robur the Conqueror—and the tumult among the balloonists, and his inexplicable disappearance.

But it was quite another thing when all the town heard that the president and secretary of the club had also disappeared during the night.

Long and keen was the search in the city and neighborhood! Useless! The newspapers of Phila-

delphia, the newspapers of Pennsylvania, the newspapers of the United States reported the facts and explained them in a hundred ways, not one of which was the right one. Heavy rewards were offered, and placards were posted up, but all to no purpose. The earth seemed to have opened and bodily swallowed the president and secretary of the Weldon Institute.

CHAPTER VI

The President and Secretary Suspend Hostilities

A BANDAGE over the eyes, a gag in the mouth, a cord round the wrists, a cord round the ankles, unable to see, to speak, or to move, Uncle Prudent, Phil Evans, and Frycollin were anything but pleased with their position. Knowing not who had seized them, nor into what they had been thrown like parcels in a goods wagon, nor where they were, nor what was reserved for them—it was enough to exasperate even the most patient of the white race, and we know that the members of the Weldon Institute were not precisely sharp as far as patience went. With his violence of character we can easily imagine how Uncle Prudent felt. One thing was evident, that Phil Evans and he would find it difficult to attend the club next evening.

As to Frycollin, with his eyes shut and his mouth closed, it was impossible for him to think of anything. He was more dead than alive.

For an hour the position of the prisoners remained unchanged. No one came to visit them, or to give them that liberty of movement and speech of which they lay in such need. They were reduced to stuffed ships, to grunts emitted over and under their gags, to everything that betrayed anger kept dumb and fury imprisoned, or rather bound down. Then after many fruitless efforts they remained for some time as though lifeless. Then as the sense of sight was denied them they tried by their sense of hearing to obtain some indication of the nature of this disquieting state of things. But in vain did they seek for any other sound than an interminable and inexplicable *l-r-r-r* which seemed to envelop them in a quivering atmosphere.

At last something happened. Phil Evans, regaining his coolness, managed to slacken the cord which bound his wrists. Little by little the knot slipped, his fingers slipped over each other, and his hands regained their usual freedom.

A vigorous rubbing restored the circulation. A moment after he had slipped off the bandage which bound his eyes, taken the gag out of his mouth, and cut the cords round his ankles with his knife. An American who has not a bowie-knife in his pocket is no longer an American.

But if Phil Evans had regained the power of moving and speaking, that was all. His eyes were useless to him—at present at any rate. The prison was quite dark, though about six feet above him a feeble gleam of light came in through a kind of loophole.

As we may imagine, Phil Evans did not hesitate to at once set free his rival. A few cuts with the bowie settled the knots which bound him foot and hand.

Immediately Uncle Prudent rose to his knees and snatched away his bandage and his gag.

"Thanks," said he, in a stifled voice.

"No!" said the other, "no thanks."

"Phil Evans?"

"Uncle Prudent?"

"Here we are no longer the president and secretary of the Weldon Institute. We are adversaries no more."

"You are right," answered Evans. "We are now only two men agreed to avenge ourselves on a third whose attempt deserves severe reprisals. And this third is——"

"Robur?"

"It is Robur!"

On this point both were absolutely in accord. On the subject there was no fear of dispute.

"And your servant?" said Phil Evans, pointing to Frycollin, who was puffing like a grampus. "We must set him free."

"Not yet," said Uncle Prudent. "He would over-whelm us with his jeremiads, and we have something else to do than abuse that other."

"What is that, Uncle Prudent?"

"To save ourselves if possible."

"And even if it is impossible."

"You are right, even if it is impossible."

There could be no doubt that this kidnapping was due to Robur, for an ordinary thief would have relieved them of their watches, jewelry, and purse, and thrown their bodies in the Schuyllkill with a good gush in their throats instead of throwing them to the bottom of—— Of what? That was a serious question, which would have to be answered before attempting an escape with any chance of success.

"Phil Evans," began Uncle Prudent, "if, when we came away from our meeting, instead of indulging in amenities to which we need not recur, we had kept our eyes more open, this would not have happened. Had we remained in the streets of Philadelphia there would have been none of this. Evidently Robur foresees what would happen at the club, and had placed some of his bandies on guard at the door. When we left Walnut Street those fellows must have watched us and followed us, and when we imprudently ventured into Fairmount Park they went in for their little game."

"Agreed," said Evans. "We were wrong not to go straight home."

"It is always wrong not to be right," said Prudent.

Here a long-drawn sigh escaped from the darkest corner of the prison. "What is that?" asked Evans.

"Nothing! Frycollin is dreaming."

"Between the moment we were seized a few steps out into the clearing and the moment we were thrown in here only two minutes elapsed. It is thus evident that these people did not take us out of Fairmount Park."

"And if they had done so we should have felt we were being moved."

"Undoubtedly; and consequently we must be in some vehicle, perhaps some of those long public wagons, or some show-caravan——"

"Evidently! For if we were in a boat moored on the Schuyllkill we should have noticed the movement due to the current——"

"That is so, and as we are still in the clearing, I think that now is the time to get away, and we can return later to settle with this Robur——"

"And make him pay for this attempt on the liberty of two citizens of the United States."

"And he shall pay pretty dearly!"

"But who is this man? Where does he come from? Is he English, or German, or French——"

"He is a scoundrel, that is enough!" said Uncle Prudent. "Now to work." And then the two men, with their hands stretched out and their fingers wide apart, began to feel round the walls to find a joint or crack.

Nothing. Nothing, not even at the door. It was closely shut and it was impossible to shoot back the lock. All that could be done was to make a hole, and escape through the hole. It remained to be seen if the knives could cut into the walls.

"But whence comes this never-ending rustling?" asked Evans, who was much impressed at the continuous f-r-r-r.

"The wind, doubtless," said Uncle Prudent.

"The wind! But I thought the night was quite calm."

"So it was. But if it isn't the wind, what can it be?"

Phil Evans got out the best blade of his knife and set to work on the wall near the door. Perhaps he might make a hole which would enable him to open it from the outside should it be only bolted or should the key have been left in the lock.

He worked away for some minutes. The only result was to nip up his knife, to snap off its point, and transform what was left of the blade into a saw.

"Doesn't it cut?" asked Uncle Prudent.

"No."

"Is the wall made of sheet iron?"

"No; it gives no metallic sound when you hit it."

"Is it of ironwood?"

"No; it isn't iron and it isn't wood."

"What is it then?"

"Impossible to say. But, anyhow, steel doesn't touch it."

Uncle Prudent, in a sudden outburst of fury, began to save and stamp on the enormous planks, while his hands sought to strangle an imaginary Robur.

"**B**E calm, Prudent, be calm! You have a try."

Uncle Prudent had a try, but the knife could do nothing against a wall which his best blades could not even scratch. The wall seemed to be made of crystal.

So it became evident that all flight was impracticable except through the door, and for a time they must resign themselves to their fate—not a very pleasant thing for the Yankee temperament, and very much to the disgust of these eminently practical men. But this conclusion was not arrived at without many conjectures and loud-sounding phrases hurled at this Robur—who, from what had been seen of him at the Weldon Institute, was not the sort of man to trouble himself much about them.

Suddenly Frycollin began to give unequivocal signs of being awed! He began to writhe in a most lamentable fashion, either with cramp in his stomach or in his limbs; and Uncle Prudent, thinking it his duty to put an end to these gymnastics, cut the cords that bound him.

He had cause to be sorry for it. Immediately there was poured forth an interminable litany, in which the terrors of fear were mingled with the tortures of hunger. Frycollin was no worse in his brain than in his stomach, and it would have been difficult to

decide to which organ the chief cause of the trouble should be assigned.

"Frycollin!" said Uncle Prudent.

"Master Uncle! Master Uncle!" answered the negro between two of his leguinous howls.

"It is possible that we are doomed to die of hunger in this prison, but we have made up our minds not to succumb until we have availed ourselves of every means of alimentation to prolong our lives."

"To eat me?" exclaimed Frycollin.

"As is always done with a negro under such circumstances! So you had better not make yourself too obvious——"

"Or you'll have your bones picked!" said Evans.

And as Frycollin saw he might be used to prolong two existences more precious than his own, he contented himself thenceforth with growling in quiet.

The time went on, and all attempts to force the door or get through the wall proved fruitless. What the wall was made of was impossible to say. It was not metal; it was not wood; it was not stone. And all the cell seemed to be made of the same stuff. When they stamped on the floor it gave a peculiar sound that Uncle Prudent found difficult to describe; the floor seemed to sound hollow, as if it were not resting directly on the ground of the clearing. And the inexplicable *t-t-t-t-t* seemed to sweep along below it. All of which was rather alarming.

"Uncle Prudent," said Phil Evans.

"Well?"

"Do you think our prison has been moved at all?"

"Not that I know of."

"Because when we were first caught I distinctly remember the fresh fragrance of the grass and the resinous odor of the park trees. While now, when I take in a good sniff of the air, it seems as though all that had gone."

"So it has."

"Why?"

"We cannot say why unless we admit that the prison has moved; and I say again that if the prison had moved, either as a vehicle on the road or a boat on the stream, we should have felt it."

Here Frycollin gave vent to a long groan, which might have been taken for his last had he not followed it up with several more.

"I expect Robur will soon have us brought before him," said Phil Evans.

"I hope so," said Uncle Prudent. "And I shall tell him——"

"What?"

"That he began by being rude and ended in being unbearable."

Here Phil Evans noticed that day was beginning to break. A gleam, still faint, filtered through the narrow window opposite the door. It ought thus to be about four o'clock in the morning, for it is at that hour in the month of June in this latitude that the horizon of Philadelphia is tinged by the first rays of the dawn.

But when Uncle Prudent sounded his repeater—which was a masterpiece from his colleague's factory—the tiny gong only gave a quarter to three, and the watch had not stopped.

"That is strange!" said Phil Evans. "At a quarter to three it ought still to be night."

"Perhaps my watch has got slow," answered Uncle Prudent.

"A watch of the Whetton Watch Company!" exclaimed Phil Evans.

Whatever might be the reason, there was no doubt that the day was breaking. Gradually the window became white in the deep darkness of the cell. However, if the dawn appeared sooner than the fortieth parallel permitted, it did not advance with the rapidity peculiar to lower latitudes. This was another observation of Uncle Prudent's—a new inexplicable phenomenon.

"Couldn't we get up to the window and see where we are?"

"We might," said Uncle Prudent. "Frycollin, get up!"

The negro arose.

"Put your back against the wall," continued Prudent, "and you, Evans, get on his shoulders while I lubricate him up."

"Right!" said Evans.

An instant afterwards his knees were on Frycollin's shoulders, and his eyes were level with the window. The window was not of lenticular glass like those on shipboard, but was a simple flat pane. It was small, and Phil Evans found his range of view was much limited.

"Break the glass," said Prudent, "and perhaps you will be able to see better."

Phil Evans gave it a sharp knock with the handle of his bowie-knife. It gave back a silvery sound, but it did not break.

Another and more violent blow. The same result.

"It is unbreakable glass!" said Evans.

It appeared as though the pane was made of glass toughened on the Siemens system, as after several blows it remained intact.

The light had now increased, and Phil Evans could see for some distance within the radius allowed by the frame.

"What do you see?" asked Uncle Prudent.

"Nothing."

"What? Not any trees?"

"No."

"Not even the top branches?"

"No."

"Then we are not in the clearing?"

"Neither in the clearing nor in the park."

"Don't you see any roofs of houses or monuments?" said Prudent, whose disappointment and anger were increasing rapidly.

"No."

"What? Not a flagstaff, nor a church tower, nor a chimney?"

"Nothing but space."

As he uttered the words the door opened. A man appeared on the threshold. It was Robur.

"Honorable bailiffs!" he said, in a serious voice, "you are now free to go and come as you like."

"Free?" exclaimed Uncle Prudent.

"Yes—within the limits of the Albatross!"

Uncle Prudent and Phil Evans rushed out of their prison. And what did they see?

Four thousand feet below them the face of a country they sought in vain to recognise.

CHAPTER VII

On Board the Albatross

"WHEN will man cease to crawl in the depths to live in the azure and quiet of the sky?"

To this question of Camille Flammarion's the answer is easy. It will be when the progress of mechanics has enabled us to solve the problem of aviation. And in a few years—as we can foresee—a more practical utilization of electricity will do much towards that solution.

In 1783, before the Montgolfier brothers had built their fire-balloon, and Charles, the physician, had devised his first aerostat, a few adventurous spirits had dreamt of the conquest of space by mechanical means. The first inventors did not think of apparatus lighter than air; for that the science of their time did not allow them to imagine. It was to contrivances heavier than air, to flying machines in imitation of the birds, that they trusted to realize aerial locomotion.

This was exactly what had been done by that madman Icarus, the son of Dædalus, whose wings, fixed together with wax, had melted as they approached the sun.

But without going back to mythological times, without dwelling on Archytas of Tarentum, we find in the works of Dante of Perugia, of Leonardo da Vinci and Gaudet, the idea of machines made to move through the air. Two centuries and a half afterwards inventors began to multiply. In 1742 the Marquis de Bacquerville designed a system of wings, tried it over the Seine, and fell and broke his arm. In 1768 Paucot conceived the idea of an apparatus with two screws, suspensive and propulsive. In 1781 Meurwen, the architect of the Prince of Baden, built an orthopteric machine, and protested against the tendency of the aerostats which had just been invented. In 1784 Launoy and Bienvenu had maneuvered a helicopter worked by springs. In 1808 there were the attempts at flight by the Austrian Jacques Degen. In 1810 came the pamphlet by Desmar of Nantes, in which the principles of "heavier than air" are laid down. From 1811 to 1840 came the inventions and researches of Derblinger, Vignat, Sarti, Dubochet, and Cagniard de Latour. In 1842 we have the Englishman Henson, with his system of inclined planes and screws worked by steam. In 1845 came Cosmos and his ascensional screws. In 1847 came Camille Veri and his helicopter made of birds' wings. In 1852 came Lator with his system of guidable parachutes, whose trial cost him his life, and in the same year came Michael Loup with his plan of gliding through the air on four revolving wings. In 1853 came Bédigac and his aeroplane with the traction screws, Vainain-Chardanne with his guidable kite, and George Conley with his flying-machines driven by gas. From 1854 to 1863 appeared Joseph Pine with several patents for aerial systems. Bréant, Cullingford, Le Bris, Du Temple, Wright, whose aeronautical screws were left-handed; Smythies, Panafieu, Crossier, etc. At length, in 1863, thanks to the efforts of Nadar, a society of "heavier than air" was founded in Paris. There the inventors could experiment with the machines, of which many were patented. Person d'Amécourt and his steam helicopter, La Landelle and his

system of combining screws with inclined planes and parachutes, Louvrie and his aerospace, Esterno and his mechanical bird, Groof and his apparatus with wings worked by levers. The impetus was given, inventors invented, calculators calculated all that could render aerial locomotion practicable. Bourcart, Le Bris, Kaufmann, Smyth, Stringfellow, Prigent, Dampard, Ponsard and De la Pause, Mey, Pénaud, Jobert, Hamman de Villeneuve, Achenbach, Garapon, Duchesne, Danduraz, Paréat, Desmède, Melkissel, Fortinard, Bearey, Tatun, Dandrieux, Edison, some with wings or screws, others with inclined planes, imagined, created, constructed, perfected their flying machines, ready to do their work, once there came to be applied to them by some inventor a motor of adequate power and excessive lightness.

This list may be a little long, but that will be forgiven, for it is necessary to give the various steps in the ladder of aerial locomotion, on the top of which appeared Robur the Conqueror. Without these attempts, these experiments of his predecessors, how could the inquirer have conceived so perfect an apparatus? And though he had but contempt for those who obstinately worked away in the direction of balloons, he held in high esteem all those persons of "heavier than air," English, American, Italian, Austrian, French—and particularly French—whose work had been perfected by him, and led him to design and then to build this flying machine known as the Albatross, which he was guiding through the currents of the atmosphere.

"The pigeon flies!" had exclaimed one of the most persistent adepts at aviation.

"They will crowd the air as they crowd the earth!" said one of his most excited partisans.

"From the locomotive to the aeromotive!" shouted the loudest of all, who had turned on the trumpet of publicity to awaken the Old and New Worlds.

Nothing, in fact, is better established, by experiment and calculation, than that the air is highly resistant. A circumference of only a yard in diameter in the shape of a parachute can not only impede descent in air, but can render it isochronous. That is a fact.

It is equally well known that when the speed is great the work of the weight varies in almost inverse ratio to the square of the speed, and therefore becomes almost insignificant.

It is also known that as the weight of a flying animal increases, the less is the proportional increase in the surface beaten by the wings in order to sustain it, although the motion of the wings becomes slower.

A flying machine must therefore be constructed to take advantage of these natural laws, to imitate the bird, "that admirable type of aerial locomotion," according to Dr. Marcy, of the Institute of France.

In short, the contrivances likely to solve the problem are of three kinds:

1. Helicopters or spirallifers, which are simply screws with vertical axes.
2. Orthopters, machines which endeavour to reproduce the natural flight of birds.
3. Aeroplanes, which are merely inclined planes like kites, but towed or driven by screws.

Each of these systems has had and still has its partisans obstinately resolved not to give way in the slightest particular.

HOWEVER, Robur, for many reasons, had rejected the two first.

The orthopter, or mechanical bird, offers certain advantages, no doubt. That the work and experiments of M. Reard in 1884 have sufficiently proved. But, as has been said, it is not necessary to copy Nature scrupulously. Locomotives are not copied from the hare, nor are ships copied from the fish. To the first we have put wheels which are not legs; to the second we have put screws which are not fins. And they do not do so badly. Besides what is this mechanical movement in the flight of birds, whose action is so complex? Has not Doctor Marcy suspected that the feathers open during the return of the wings so as to let the air through them? And is not that rather a difficult operation for an artificial machine?

On the other hand, aeroplanes have given many good results. Screws opposing a slanting plane to the bed of air will produce an ascensional movement, and the models experimented on have shown that the disposable weight, that is to say the weight it is possible to deal with as distinct from that of the apparatus, increases with the square of the speed. Hence the aeroplane has the advantage over the aerostat even when the aerostat is furnished with the means of locomotion.

Nevertheless Robur had thought that the simpler his contrivance the better. And the screws—the Saint Helens that had been thrown in his teeth at the Weldon Institute—had sufficed for all the needs of his flying machine. One series could hold it suspended in the air, the other could drive it along under conditions that were marvelously adapted for speed and safety.

If the orthopter—striking like the wings of a bird—raised itself by beating the air, the helicopter raised itself by striking the air obliquely with the fins of the screw as it rotated on an inclined plane. These fins, or arms, are in reality wings, but wings disposed as a helix instead of as a paddle wheel. The helix advances in the direction of its axis. Is the axis vertical? Then it moves vertically. Is the axis horizontal? Then it moves horizontally.

The whole of Robur's flying apparatus depended on these two movements, as will be seen from the following detailed description, which can be divided under three heads—the platform, the engines of suspension and propulsion, and the machinery.

Platform.—This was a framework a hundred feet long and twelve wide, a ship's deck in fact, with a projecting prow. Beneath was a hull solidly built, enclosing the engines, stores, and provisions of all sorts, including the water tanks. Round the deck a few light uprights supported a wire trellis that did duty for bulwarks. On the deck were three houses, whose compartments were used as cabins for the crew, or as machine-rooms. In the center house was the machine which drove the lifting helices, in that forward was the machine that drove the bow screw, in that aft was the machine that drove the stern screw. In the bow were the cook's galley and the crew's quarters; in the stern were several cabins, including that of the engineer, the saloon, and above them all a glass house in which stood the helmsman, who steered the vessel by means of a powerful rudder. All these cabins were lighted by port-holes filled with toughened glass, which has ten times the resistance of ordinary glass. Beneath this hull was a system of flexible springs to ease off

the concussion when it became advisable to land.

Engines of suspension and propulsion.—Above the deck rose thirty-seven vertical axes, fifteen along each side, and seven, more elevated in the centre. The *Albatross* might be called a clipper with thirty-seven masts. But these masts instead of sails bore each two horizontal screws, not very large in diameter or diameter, but driven at prodigious speed. Each of these axes had its movement independent of the rest, and each alternate one spun round in a different direction from the others, so as to avoid any tendency to gyration. Hence the screws as they rose on the vertical column of air retained their equilibrium by their horizontal resistance. Consequently the apparatus was furnished with seventy-four lifting screws whose three wings were connected by a metallic circle which economized their motive force. In front and behind, mounted on horizontal axes, were two propelling screws, each with four arms. These screws were of much larger diameter than the lifting ones, but could be worked at quite their speed. In fact, the vessel combined the system of Cosens, La Landelle, and Ponton d'Amécourt, as perfected by Robur. But it was in the choice and application of his motive force that he could claim to be an inventor.

Machinery.—Robur had not availed himself of the vapor of water or other liquids, nor compressed air and other elastic gases, nor explosive mixtures capable of producing mechanical motion. He employed electricity, that agent which one day will be the soul of the industrial world. But he required no electro-generator to produce it. All he trusted to were batteries and accumulators. What were the elements of those batteries, and what were the acids he used, Robur only knew. And the construction of the accumulators was kept equally secret. Oh what were their positive and negative plates? None could say. The engineer took good care—and not unreasonably—to keep his secret unsentimental. One thing was unmistakable, and that was that the batteries were of extraordinary strength; and the accumulators left those of Faure-Sellon-Voickmar very far behind in yielding currents whose amperes ran into figures up to then unknown. Thus there was obtained a power to drive the screws and communicate a suspending and propelling force in excess of all his requirements under any circumstances.

But—it is as well to repeat it—this belonged entirely to Robur. He kept it a close secret. And, if the president and secretary of the Weldon Institute did not happen to discover it, it would probably be lost to humanity.

It need not be shown that the apparatus possessed sufficient stability. Its center of gravity proved that at once. There was no danger of its making alarming angles with the horizontal, still less of its capsizing.

And now for the metal used by Robur in the construction of his aerostat—a name which can be exactly applied to the *Albatross*. What was this material, so hard that the bowie-knife of Phil Evans could not scratch it, and Uncle Prudent could not explain its nature? Simply paper!

For some years this fabrication had been making considerable progress. Unsized paper, with the sheets impregnated with dextrin and starch and squeezed in hydraulic presses, will form a material hard like steel. There are made of it pulleys, rails, and wagon-wheels, much more solid than metal wheels, and far

fighter. And it was this lightness and solidity which Robur availed himself of in building his aerial locomotive. Everything—framework, hull, houses, cabins—were made of straw paper turned hard as metal by compression, and—what was not to be despised in an apparatus flying at great heights—incombustible. The different parts of the engines and the screws were made of gelatinized fiber, which combined in sufficient degree flexibility with resistance. This material could be used in every form. It was insoluble in most gases and liquids, acids or caustics, to say nothing of its insulating properties, and it proved most valuable in the electric machinery of the *Albatross*.

Robur, his mate Tom Turner, an engineer and two assistants, two stenographers and a cook—eight men all told—formed the crew of the aircraft, and proved ample for all the maneuvers required in aerial navigation. There were arms of the chase and of war; fishing appliances; electric lights; instruments of observation, compasses, and sextants for checking the course, thermometers for studying the temperature, different barometers, some for estimating the heights attained, others for indicating the variations of atmospheric pressure; a worm-glass for forecasting tempests; a small library; a portable printing press; a field-piece mounted on a pivot, breech-loading and throwing a three-inch shell, a supply of powder, bullets, dynamic cartridges; a cooking-stove warmed by currents from the accumulators; a stock of preserved meats and vegetables sufficient to last for months. Such were the outfit and stores of the aircraft—in addition to the famous trumpet.

There was besides a light india-rubber boat, incombustible, which could carry eight men on the surface of a river, a lake, or a calm sea.

But were there any parachutes in case of accident? No. Robur did not believe in accidents of that kind. The axes of the screws were independent. The stoppage of a few would not affect the motion of the others; and if only half were working, the *Albatross* could keep aloft in her natural element.

"And with her," said Robur to his guests—guests in spite of themselves—"I am master of the seventh part of the world, larger than Africa, Oceania, Asia, the Americas and Europe, this aerial Icarian sea, which millions of Icarians will one day people."

CHAPTER VIII

The Balloonists Refuse to be Convinced

THE president of the Weldon Institute was stupefied; his companion was astonished. But neither of them would allow any of their very natural amusement to be visible.

The valet Frycollin did not conceal his terror at finding himself borne through space on such a machine, and he took no pains whatever to hide it.

The ascensional screws were rapidly spinning overhead. Fast as they were going, they would have to triple their speed if the *Albatross* was to ascend to higher zones. The two propellers were running very easily and driving the ship at about eleven knots an hour.

As they leaned over the rail the passengers of the *Albatross* could perceive a long sinuous liquid ribbon which meandered like a mere brook through a varied country amid the gleaming of many lagoons obliquely struck by the rays of the sun. The brook was a river,

one of the most important in that district. Along its left bank was a chain of mountains extending out of sight.

"And will you tell us where we are?" asked Uncle Prudent, in a voice tremulous with anger.

"I have nothing to teach you," answered Robur.

"And will you tell us where we are going?" asked Phil Evans.

"Through space."

"And how long will that last?"

"Until it ends."

"Are we going round the world?" asked Phil Evans ironically.

"Further than that," said Robur.

"And if this voyage does not suit us?" asked Uncle Prudent.

"It will have to suit you."

That is a foretaste of the nature of the relations that were to obtain between the master of the *Albatross* and his guests, not to say his prisoners. Manifestly he wished to give them time to cool down, to admire the marvelous apparatus which was bearing them through the air, and doubtless to compliment the inventor. And so he went off to the other end of the deck, leaving them to examine the arrangement of the machinery and the management of the ship or to give their whole attention to the landscape which was unfolding beneath them.

"Uncle Prudent," said Evans, "unless I am mistaken we are flying over Eastern Canada. That river in the northwest is the St. Lawrence. That town we are leaving behind is Quebec."

It was indeed the old city of Champlain, whose zinc roofs were shining like reflectors in the sun. The *Albatross* must thus have reached the forty-sixth degree of north latitude, and thus was explained the premature advance of the day with the abnormal prolongation of the dawn.

"Yes," said Phil Evans, "there is the town in its amphitheater, the hill with its citadel, the Gibraltar of North America. There are the cathedrals. There is the Custom House with its dome surrounded by the British flag!"

Phil Evans had not finished before the Canadian city began to slip into the distance.

The clipper entered a zone of light clouds, which gradually shut off a view of the ground.

Robur, seeing that the president and secretary of the Weldon Institute had directed their attention to the external arrangements of the *Albatross*, walked up to them and said:

"Well, gentlemen, do you believe in the possibility of aerial locomotion by machines heavier than air?"

It would have been difficult not to assent to the evidence. But Uncle Prudent and Phil Evans did not reply.

"You are silent," continued the engineer. "Doubtless hunger makes you dumb! But if I undertook to carry you through the air, I did not think of feeding you on such a poorly nutritive fluid. Your first breakfast is waiting for you."

As Uncle Prudent and Phil Evans were feeling the pangs of hunger somewhat keenly they did not care to stand upon ceremony. A meal would commit them to nothing; and when Robur put them back on the ground they could resume full liberty of action.

And so they followed into a small dining-room in the aftermost house. There they found a well-laid table at which they could take their meals during the

voyage. There were different preserves; and, among other things, was a sort of bread made of equal parts of flour and meat reduced to powder and worked together with a little lard, which boiled in water made excellent soup; and there were fried saffers of bacon; and for drink there was tea.

Neither had Fryocidin been forgotten. He was taken forward, and there found some strong soup made of this bread. In truth he had to be very hungry to eat at all, for his jaws shook with fear, and almost refused to work. "If it was to break!—if it was to break!" said the unfortunate regrettably continual failings. Only think! A fall of over four thousand feet, which would smash him to a jelly!

An hour afterwards Uncle Prudent and Phil Evans appeared on the deck. Robur was no longer there. At the stern the man at the wheel in his glass cage, his eyes fixed on the compass, followed imperceptibly without hesitation the route given by the engineer.

As for the rest of the crew, breakfast probably kept them from their posts. An assistant engineer, examining the machinery, went from one house to the other.

If the speed of the ship was great the two colleagues could only estimate it imperfectly, for the *Albatross* had passed through the cloud zone which the sun showed some four thousand feet below.

"I can hardly believe it," said Phil Evans.

"Don't believe it!" said Uncle Prudent. And going to the bow they looked out towards the western horizon.

"Another town," said Phil Evans.

"Do you recognize it?"

"Yes! It seems to me to be Montreal."

"Montreal? But we only left Quebec two hours ago!"

"That proves that we must be going at a speed of seventy-five miles an hour."

Such was the speed of the aeronaut; and if the passengers were not inconvenienced by it, it was because they were going with the wind. In a calm such speed would have been difficult and the rate would have sunk to that of an express. In a head-wind the speed would have been impossible.

Phil Evans was not mistaken. Below the *Albatross* appeared Montreal, easily recognizable by the Victoria Bridge, a tubular bridge thrown over the St. Lawrence like the railway viaduct over the Venice lagoon. Soon they could distinguish the town's wide streets, its huge shops, its palatial banks, its cathedral, recently built on the model of St. Peter's at Rome, and then Mount Royal, which commands the city and forms a magnificent park.

Luckily Phil Evans had visited the chief towns of Canada, and could recognize them without asking Robur. After Montreal they passed Ottawa, whose falls, seen from above, looked like a vast cauldron in ebullition, throwing off masses of steam with grand effect.

"There is the Parliament House."

And he pointed out a sort of Nuremberg toy planted on a hill top. This story with its polychrome architecture resembled the House of Parliament in London much as the Montreal cathedral resembles St. Peter's at Rome. But that was of no consequence: there could be no doubt it was Ottawa.

Soon the city faded off towards the horizon, and formed but a luminous spot on the ground.

It was almost two hours before Robur appeared.

His mate, Tom Turner, accompanied him. He said only three words. These were transmitted to the two assistant engineers in the fore and aft engine-rooms. At a sign the helmsman changed the direction of the *Albatross* a couple of points to the south-west; at the same time Uncle Prudent and Phil Evans felt that a greater speed had been given to the propellers.

In fact, the speed had been doubled, and now surpassed anything that had ever been attained by terrestrial engines. Torpedo boats do their twenty-two knots an hour; railway trains do their sixty miles an hour; the ice boats on the frozen Hudson do their sixty-five miles an hour; a machine built by the Paterson company, with a cogged wheel, has done its eighty miles; and another locomotive between Trenton and Jersey City has done its eighty-four.

But the *Albatross*, at full speed, could do her hundred and twenty miles an hour, or 176 feet per second. This speed is that of the storm which tears up trees by the roots. It is the mean speed of the carrier pigeon, and is only surpassed by the flight of the swallow (220 feet per second), and that of the swift (274 feet per second).

In a word, as Robur had said, the *Albatross*, by using the whole force of her screws, could make the tour of the globe in two hundred hours, or less than eight days.

Is it necessary to say so? The phenomenon whose appearance had so much puzzled the people of both worlds was the aeronaut of the engineer. The trumpet which blared its scintillating fanfares through the air was that of the mate, Tom Turner. The flag planted on the chief monuments of Europe, Asia, America, was the flag of Robur the Conqueror and his *Albatross*.

And if up to them the engineer had taken many precautions against being recognized, if by preference he travelled at night, clearing the way with his electric lights, and during the day vanishing into the zones above the clouds, he seemed now to have no wish to keep his secret hidden. And if he had come to Philadelphia and presented himself at the meeting of the Weldon Institute, was it not that they might share in his prodigious discovery, and that he might convince *ipse facto* the most incredulous? We know how he had been received, and we see what reprisals he had taken on the president and secretary of the club.

Again did Robur approach his prisoners, who affected to be in no way surprised at what they saw, of what had succeeded in spite of them. Evidently beneath the cranium of these two Anglo-Saxon heads there was a thick crust of obstinacy, which would not be easy to remove.

On his part, Robur did not seem to notice anything particular, and coolly continued the conversation which he had begun two hours before.

"Gentlemen," said he, "you ask yourselves doubtless if this apparatus, so marvelously adapted for aerial locomotion is susceptible of receiving greater speed. It is not worth while to conquer space if we cannot devour it. I wanted the air to be a solid support to me, and it is. I saw that to struggle against the wind I must be stronger than the wind, and I am.

I had no need of sails to drive me, nor oars nor wheels to push me, nor rails to give me a faster road. Air is what I wanted, that was all. Air surrounds me as water surrounds the submarine boat, and in it my propellers act like the screws of a steamer. That is how I solved the problem of aviation. That is what a balloon will never do, nor will any machine that is lighter than air."

Science, absolute, on the part of the colleague, which did not for a moment discredit the engineer. He contented himself with a half-smile, and continued in his interrogative style, "Perhaps you ask if to this power of the Albatross to move horizontally there is added an equal power of vertical movement—in a word, if, when we visit the higher zones of the atmosphere, we can compete with an aerostat? Well, I should not advise you to enter the Go-ahead against her!"

The two colleagues shrugged their shoulders. That was probably what the engineer was waiting for.

Robur made a sign. The propelling screws immediately stopped, and after running for a mile the Albatross pulled up motionless.

At a second gesture from Robur the ascensional helices revolved at a speed that can only be compared to that of a stream in acoustical experiments. Their fan-rot rose nearly an octave in the scale of sound, diminishing gradually in intensity as the air became more rarefied, and the machine rose vertically, like a lark singing his song in space.

"Master! Master!" shouted Frycollin. "See that it doesn't break?"

A smile of disdain was Robur's only reply. In a few minutes the Albatross had attained the height of 2,700 feet, and extended the range of vision by seventy miles, the barometer having fallen 480 millimeters.

Then the Albatross descended. The diminution of the pressure in high altitudes leads to the diminution of oxygen in the air, and consequently in the blood. This has been the cause of several serious accidents which have happened to aeronauts, and Robur saw no reason to run any risk.

The Albatross thus returned to the height she seemed to prefer, and her propellers beginning again, drove her off to the southwest.

"Now, sir, if that is what you wanted you can reply."

Then, leaning over the rail, he remained absorbed in contemplation.

When he raised his head the president and secretary of the Walden Institute stood by his side.

"Engineer Robur," said Uncle Prudent, in vain endeavoring to control himself, "we have nothing to ask about what you seem to believe, but we wish to ask you a question which we think you would do well to answer."

"Speak."

"By what right did you attack us in Philadelphia in Fairmount Park? By what right did you shut us up in that prison? By what right have you brought us against our will on board this flying machine?"

"And by what right, Maximus Gallicornius, did you insult and threaten me in your club in such a way that I am astonished I came out of it alive?"

"To ask is not to answer," said Phil Evans, "and I repeat, by what right?"

"Do you wish to know?"

"If you please."

"Well, then, by the right of the strongest?"

"That is cynical."

"But it is true."

"And for how long, citizen engineer," asked Uncle Prudent, who was nearly exploding, "for how long do you intend to exercise that right?"

"How can you?" said Robur, ironically, "how can you ask me such a question when you have only to cast down your eyes to enjoy a spectacle unparalleled in the world?"

The Albatross was then sweeping across the immense expanse of Lake Ontario. She had just crossed the country so poetically described by Cooper. Then she followed the southern shore and headed for the celebrated river which pours into it the waters of Lake Erie, breaking them to powder in its cataraets.

In an instant a majestic sound, a roar as of the tempest, mounted towards them; and, as if a humid fog had been projected into the air, the atmosphere sensibly freshened.

Below were the liquid masses. They seemed like an enormous flowing sheet of crystal amid a thousand rainbows due to refraction as it decomposed the solar rays. The sight was sublime.

Before the falls a bridge, stretching like a thread, united one bank to the other. Three miles below was a suspension-bridge, across which a train was crawling from the Canadian to the American bank.

"The falls of Niagara!" exclaimed Phil Evans. And as the exclamation escaped him, Uncle Prudent was doing all he could to admire nothing of these wonders.

A minute afterwards the Albatross had crossed the river which separates the United States from Canada, and was flying over the vast "catharities of the West."

CHAPTER IX

Across the Prairie

IN one of the cabins of the after-house Uncle Prudent and Phil Evans had found two excellent berths, with clean linen, change of clothes, and traveling-cloaks and rugs. No Atlantic liner could have offered them more comfort. If they did not sleep soundly it was that they did not wish to do so, or rather that their very real anxiety prevented them. In what adventure had they embarked? To what series of experiments had they been invited? How would the business end? and above all, what was Robur going to do with them?

Frycollin, the valet, was quartered forward in a cabin adjoining that of the cook. The neighborhood did not displease him; he liked to rub shoulders with the great in this world. But if he finally went to sleep it was to dream of fall after fall, of projections through space, which made his sleep a horrible nightmare.

However, nothing could be quieter than this journey through the atmosphere, whose currents had grown weaker with the evening. Beyond the rustling of the blades of the screws there was not a sound, except now and then the whistle from some terrestrial locomotive, or the calling of some animal. Strange instinct! These terrestrial beings felt the aerial glide over them, and uttered cries of terror as it passed. On the morrow, the 14th of June, at five o'clock, Uncle Prudent and Phil Evans were

walking on the deck of the Albatross. Nothing had changed since the evening; there was a look-out forward, and the helmsman was in his glass-cage.

Why was there a look-out? Was there any chance of collision with another such machine? Certainly not. Robur had not yet found imitators. The chance of encountering an aerostat gliding through the air was too remote to be regarded. In any case it would be all the worse for the aerostat—the earthen pot and the iron pot. The Albatross had nothing to fear from the collision.

But what could happen? The aerostat might find herself like a ship on a lee shore if a mountain that could not be outflanked or passed barred the way. These are the reefs of the air, and they have to be avoided as a ship avoids the reefs of the sea. The engineer, it is true, had given the course, and in doing so had taken into account the altitude necessary to clear the summits of the high lands in the district. But as the aerostat was rapidly crossing a mountainous country, it was only prudent to keep a good lookout, in case some slight deviation from the course became necessary.

Looking at the country beneath them, Uncle Prudent and Phil Evans noticed a large lake, whose lower southern end the Albatross had just reached. They concluded, therefore that during the night the whole length of Erie had been traversed, and that, as they were going due west, they would soon be over Lake Michigan. "There can be no doubt of it," said Phil Evans, "and that group of roofs on the horizon is Chicago."

He was right. It was indeed the city from which the seventeen railways diverge, the Queen of the West, the vast reservoir into which flow the products of Indiana, Ohio, Wisconsin, Missouri, and all the states which form the western half of the Union.

Uncle Prudent, through an excellent telescope he had found in his cabin, easily recognized the principal buildings. His colleague pointed out to him the churches and public edifices, the numerous "elevators" or mechanical granaries, and the huge Sherman Hotel, whose windows seemed like a hundred glittering points on each of its faces.

"If that is Chicago," said Uncle Prudent, "it is obvious that we are going farther west than is convenient for us if we are to return to our starting place."

And, in fact, the Albatross was traveling in a straight line from the Pennsylvania capital.

But if Uncle Prudent wished to ask Robur to take him eastwards he could not then do so. That morning the engineer did not leave his cabin. Either he was occupied in some work, or else he was asleep, and the two colleagues sat down to breakfast without seeing him.

The speed was the same as that during last evening. The wind blew easterly the rate was not interfered with at all, and as the thermometer only falls a degree centigrade for every seventy meters of elevation the temperature was not insupportable. And so, in chatting and thinking and waiting for the engineer, Uncle Prudent and Phil Evans walked about beneath the forest of screws, whose gyratory movement gave their arms the appearance of semi-diaphanous disks.

The State of Illinois was left by its northern frontier in less than two hours and a half; and they crossed the Father of Waters, the Mississippi, whose

double-decked steamboats seemed no bigger than canoes. Then the Albatross flew over Iowa after having sighted Iowa city about eleven o'clock in the morning.

A few chains of hills, "bluffs" as they are called, curved across the face of the country trending from the south to the northwest, whose moderate height necessitated no rise in the course of the aerostat. Soon the bluffs gave place to the large plains of western Iowa and Nebraska—immense prairies extending all the way to the foot of the Rocky Mountains. Here and there were many "rises," affluents or minor affluents of the Missouri. On their banks were towns and villages, growing more scattered as the Albatross sped farther west.

Nothing particular happened during this day. Uncle Prudent and Phil Evans were left entirely to themselves. They hardly noticed Frycollin sprawling at full length in the bow, keeping his eyes shut so that he could see nothing. And they were not attacked by vertigo, as might have been expected. There was no guiding mark, and there was nothing to cause the vertigo, as there would have been on the top of a lofty building. The alyssa has no attractive power when it is gazed at from the car of a balloon or deck of an aerostat. It is not an alyssa that opens beneath the aerostat, but an horizon that rises round him on all sides like a cup.

In a couple of hours the Albatross was over Omaha, on the Nebraskan frontier—Omaha city, the real head of the Pacific Railway, that long line of rails, four thousand five hundred miles in length, stretching from New York to San Francisco. For a moment they could see the yellow waters of the Missouri, then the town, with its houses of wood and brick in the center of a rich basin, like a buckle in the iron belt which clasp North America round the waist. Doubtless, also, as the passengers in the aerostat could observe all the details, the inhabitants of Omaha noticed the strange machine. Their astonishment at seeing it gliding overhead could be no greater than that of the president and secretary of the Weldon Institute at finding themselves on board.

Anyhow, the journals of the Union would be certain to notice the fact. It would be the explanation of the astonishing phenomenon which the whole world had been wondering over for some time.

In an hour the Albatross had left Omaha and crossed the Platte River, whose valley is followed by the Pacific Railway in its route across the prairie. Things looked serious for Uncle Prudent and Phil Evans.

"It is real, then, this absurd project of taking us to the Antipodes."

"And whether we like it or not!" exclaimed the other. "Robur had better take care! I am not the man to stand that sort of thing."

"Nor am I!" replied Phil Evans. "But be calm, Uncle Prudent, be calm."

"Be calm!"

"And keep your temper until it is wanted."

By five o'clock they had crossed the eastern countries covered with pines and poplars, and the Albatross was over the appropriately named Bad Lands of Nebraska—a chaos of ochre-colored hills, of mountainous fragments fallen on the soil and broken in their fall. At a distance these blocks take the most fantastic shapes. Here and there amid this enormous game of knucklebones there could be traced the

imaginary ruins of mediæval cities with forts and dungeons, pepper-box turrets, and machicolated towers. And in truth these Bad Lands are an immense cessary where bleaching in the sun myriads of fragments of pachyderms, chelonians, and even, some would have us believe, fossil men, overwhelmed by unknown cataclysmic ages and ages ago.

WHEN evening came the whole basin of the Platte River had been crossed, and the plain extended to the extreme limits of the horizon, which rose high owing to the altitude of the Albatross.

During the night there were no more shrill whistles of locomotives or deeper notes of the river steamers to trouble the quiet of the starry firmament. Long howlings occasionally reached the aerod from the herds of buffalo that roamed over the prairie in search of water and pasturage. And when they ceased, the trampling of the grass under their feet produced a dull roaring similar to the rushing of a flood, and very different from the continuous t-t-t-t of the screws.

Then from time to time came the howl of a wolf, a fox, a wild cat, or a coyote, the *Canis latrans*, whose name is justified by his sallow bark.

Occasionally came penetrating odors of mint, and sage, and absinthe, mingled with the more powerful fragrance of the conifers which rose floating through the night air.

At last came a muzzling yell, which was not due to the coyote. It was the shout of a Redskin, which no Tenderfoot would confound with the cry of a wild beast.

CHAPTER X

Westward—But Whither?

THE next day, the 15th of June, about five o'clock in the morning, Phil Evans left his cabin. Perhaps he would today have a chance of speaking to Robur. Desirous of knowing why he had not appeared the day before, Evans addressed himself to the mate, Tom Turner.

Tom Turner was an Englishman of about forty-five, broad in the shoulders and short in the legs, a man of iron, with one of those enormous characteristic heads that Hagarth rejoiced in.

"Shall we see Mr. Robur today?" asked Phil Evans.

"I don't know," said Turner.

"I need not ask if he had gone out."

"Perhaps he has."

"And when will he come back?"

"When he has finished his cruise."

And Tom went into his cabin.

With this reply they had to be contented. Matters did not look promising, particularly as on reference to the compass it appeared that the Albatross was still steering south-west.

Great was the contrast between the barren tract of the Bad Lands passed over during the night and the landscape then unrolling beneath them.

The aerod was now more than six hundred miles from Omaha, and over a country which Phil Evans could not recognize because he had never been there before. A few forts to keep the Indians in order crowned the bluffs with their geometric lines, formed oftener of palisades than walls. There were few

villages and few inhabitants, the country differing widely from the auriferous lands of Colorado many leagues to the south.

In the distance a long line of mountain crests, in great confusion as yet, began to appear. They were the Rocky Mountains.

For the first time that morning Uncle Prudent and Phil Evans were sensible of a certain looseness of temperature which was not due to a change in the weather, for the sun shone in superb splendor.

"It is because of the Albatross being higher in the air," said Phil Evans.

In fact the barometer outside the central deck-house had fallen 54 millimeters, thus indicating an elevation of about 10,000 feet above the sea. The aerod was at this altitude owing to the elevation of the ground. An hour before she had been at a height of 13,000 feet, and behind her were mountains covered with perpetual snow.

There was nothing Uncle Prudent and his companion could remember which would lead them to discover where they were. During the night the Albatross had made several stretches north and south at tremendous speed, and that was what had put them out of their reckoning.

After talking over several hypotheses more or less plausible they came to the conclusion that this country encircled with mountains must be the district declared by an Act of Congress in March, 1872, to be the National Park of the United States. A strange region it was. It well merited the name of a park—a park with mountains for hills, with lakes for ponds, with rivers for streamlets, and with geysers of marvellous power instead of fountains.

In a few minutes the Albatross glided across the Yellowstone River, leaving Milton Stevenson on the right, and coasting the large lake which bears the name of the stream. Great was the variety on the banks of this basin, ribbed as they were with obsidian and tiny crystals, reflecting the sunlight on their myriad facets. Wonderful was the arrangement of the islands on its surface; magnificent were the blue reflections of the gigantic mirror. And around the lake, one of the highest in the globe, were multitudes of pelicans, swans, gulls and heron-like geese and divers. In places the steep banks were clothed with green trees, pines and larches, and at the foot of the escarpments there shot upwards innumerable white fumaroles, the vapor escaping from the soil as from an enormous reservoir in which the water is kept in permanent ebullition by subterranean fire.

THE cook might have seized the opportunity of securing an ample supply of trout, the only fish the Yellowstone Lake contains in myriads. But the Albatross kept on at such a height that there was no chance of indulging in a catch which assuredly would have been miraculous.

In three quarters of an hour the lake was passed over, and a little farther on the last was seen of the geyser region, which rivals the finest in Iceland. Leaving over the rail, Uncle Prudent and Phil Evans watched the liquid columns which leaped up as though to furnish the aerod with a new element. There were the Fan, with the jets shot forth in rays, the Fortress, which seemed to be defended by water-spouts, Old Faithful, with her plume crowned with the rainbows, the Giant, spouting forth a vertical

torrent twenty feet round and more than two hundred feet high.

Robur must evidently have been familiar with this incomparable spectacle, unique in the world, for he did not appear on deck. Was it, then, for the sole pleasure of his guests that he had brought the aeronaut above the national domain? If so, he came not to receive their thanks. He did not even trouble himself during the passage of the Rocky Mountains, which the *Albatross* approached at about seven o'clock.

By increasing the speed of her wings, as a bird riding in its flight, the *Albatross* would clear the highest ridges of the chain, and sink again over Oregon or Utah. But the maneuver was unnecessary. The passes allowed the barrier to be crossed without ascending for the higher ridges. There are many of these canyons, or steep valleys, more or less narrow, through which they could glide, such as Bridger Canyon, through which runs the Pacific Railway into the Mormon territory, and others to the north and south of it.

It was through one of these that the *Albatross* headed, after slackening speed so as not to dash against the walls of the canyon. The steersman, with a sureness of hand rendered more effective by the sensitiveness of the rudder, maneuvered his craft as if she were a crack racer in a Royal Victoria yacht race. It was really extraordinary. In spite of all the jealousy of the two advocates of "lighter than air," they could not help being surprised at the perfection of this engine of aerial locomotion.

In less than two hours and a half they were through the Rockies, and the *Albatross* had resumed her former speed of sixty-two miles an hour. She was steering southwest, so as to cut across Utah diagonally as she neared the ground. She had even dropped several hundred yards when the sound of a whistle attracted the attention of Uncle Prudent and Phil Evans.

It was a train on the Pacific Railway on the road to Salt Lake City.

And then, in obedience to an order secretly given, the *Albatross* dropped still lower so as to chase the train, which was going at full speed. She was immediately sighted. A few heads showed themselves at the doors of the cars. Then numerous passengers crowded the gangways. Some did not hesitate to climb on the roof to get a better view of the flying machine. Cheers came floating up through the air, but no Robur appeared in answer to them.

The *Albatross* continued her descent, slowing her elevating screws and moderating her speed so as not to leave the train behind. She flew about like an enormous beetle or a gigantic bird of prey. She headed off to the right and left, and swept on in front, and hung behind, and proudly displayed her flag with the golden sun, to which the conductor of the train replied by waving the Stars and Stripes.

In vain the prisoners, in their desire to take advantage of the opportunity, endeavored to make themselves known to those below. In vain the president of the Weldon Institute roared forth at the top of his voice, "I am Uncle Prudent of Philadelphia!" And the secretary followed suit with, "I am Phil Evans, his colleague!" Their shouts were lost in the thousand cheers with which the passengers greeted the aeronaut.

Three or four of the crew of the *Albatross* had ap-

peared on the deck, and one of them, like sailors when passing a ship less speedy than their own, held out a rope, an ironical way of offering to tow them.

And then the *Albatross* resumed her original speed, and in half an hour the express was out of sight. About one o'clock there appeared a vast disk, which reflected the solar rays as if it were an immense mirror.

"That ought to be the Mormon capital, Salt Lake City," said Uncle Prudent. And so it was, and the disk was the roof of the Tabernacle, where ten thousand saints can worship at their ease. This vast dome, like a convex mirror, threw off the rays of the sun in all directions.

It vanished like a shadow, and the *Albatross* sped on her way to the southwest with a speed that was not felt, as it surpassed that of the chasing wind. Soon she was in Nevada, over the silver regions, which the Sierra separates from the golden lands of California.

"We shall certainly reach San Francisco before night," said Phil Evans.

"And then?" asked Uncle Prudent.

It was six o'clock precisely when the Sierra Nevada was crossed by the same pass as that taken by the railway. Only a hundred and eighty miles then separated them from San Francisco, the Californian capital.

At the speed the *Albatross* was going she would be over the city by eight o'clock.

At this moment Robur appeared on deck. The colleagues walked up to him.

"Engineer Robur," said Uncle Prudent, "we are now on the confines of America! We think the time has come for this joke to end."

"I never joke," said Robur.

He raised his hand. The *Albatross* swiftly dropped towards the ground, and at the same time such speed was given her as to drive the prisoners into their cabin.

As soon as the door was shut, Uncle Prudent exclaimed, "I could strangle him!"

"We must try to escape!" said Phil Evans.

"Yes; cost what it may!"

A long murmur greeted their ears. It was the beating of the surf on the seashore. It was the Pacific Ocean!

CHAPTER XI

The Wide Pacific

UNCLE PRUDENT and Phil Evans had quite made up their minds to escape. If they had not had to deal with the eight particularly vigorous men who composed the crew of the aeronaut they might have tried to succeed by main force. But as they were only two—for Frydlin could only be considered as a quantity of no importance—force was not to be thought of. Hence recourse must be had to strategy as soon as the *Albatross* again took the ground. Such was what Phil Evans endeavored to impress on his inescapable colleague, though he was in constant fear of Prudent aggravating matters by some premature outbreak.

In any case the present was not the time to attempt anything of the sort. The aeronaut was sweeping along over the North Pacific. On the following morning, that of June 16th, the coast was out of sight. And as

the coast curves off from Vancouver Island up to the Aleutians—belonging to that portion of America ceded by Russia to the United States in 1867—it was highly probable that the *Albatross* would cross it at the end of the curve, if her course remained unchanged.

How long the night appeared to be to the two friends! How eager they were to get out of their cabins! When they came on deck in the morning the dawn had for some hours been silencing the eastern horizon. They were nearing the June solstice, the longest day of the year in the northern hemisphere, when there is hardly any night along the sixtieth parallel.

Either from custom or intention Robur was in no hurry to leave his deck-house. When he came out this morning he contented himself with bowing to his two guests as he passed them in the stern of the *aéronet*.

And now Frycollin ventured out of his cabin. His eyes red with sleeplessness, and dazed in their look, he tottered along like a man whose feet feel it is not on solid ground. His first glance was at the elevating screws, which were working with gratifying regularity without any signs of haste.

That done, the negro stumbled along to the rail, and grasped it with both hands, as to make sure of his balance. Evidently he wished to view the country over which the *Albatross* was flying at the height of seven hundred feet or more.

At first he kept himself well back behind the rail. Then he shook it to make sure it was firm; then he drew himself up; then he bent forward; then he stretched out his head. It need not be said that while he was executing these different maneuvers he kept his eyes shut. At last he opened them.

What a shout! And how quickly he fled! And how deeply his head sank back into his shoulders! At the bottom of the abyss he had seen the immense ocean. His hair would have risen on end—if it had not been wool.

"The sea! the sea!" he cried. And Frycollin would have fallen on the deck had not the cook opened his arms to receive him.

This cook was a Frenchman, and probably a Gascon, his name being François Tapage. If he was not a Gascon he must in his infancy have inhaled the breezes of the Gironde. How did this François Tapage find himself in the service of the engineer? By what chain of accidents had he become one of the crew of the *Albatross*? We can hardly say; but in any case he spoke English like a Yankee. "Eh, staid up!" said he, lifting the negro by a vigorous clutch at the waist.

"Master Tapage!" said the poor fellow, giving a despairing look at the screws.

"At your service, Frycollin."

"Did this thing ever smash?"

"No, but it will end by smashing."

"Why? Why?"

"Because everything must end."

"And the sea is beneath us?"

"If we are to fall, it is better to fall in the sea."

"We shall be drowned."

"We shall be drowned, but we shall not be smashed to a jelly."

The next moment Frycollin was on all fours, creeping to the back of his cabin.

During this day the *aéronet* was only driven at

moderate speed. She seemed to skim the placid surface of the sea, which lay gleaming in the sunshine about a hundred feet beneath. Uncle Prudent and his companion remained in their cabins, so that they did not meet with Robur, who walked about smoking alone or talking to the mate. Only half the screws were working, yet that was enough to keep the apparatus afloat in the lower zones of the atmosphere.

The crew, as a change from the ordinary routine, would have endeavored to catch a few fish, had there been any sign of them; but all that could be seen on the surface of the sea were a few of those yellow-bellied whales which measure about eighty feet in length. These are the most formidable cetaceans in the northern seas, and whalers are very careful in attacking them, for their strength is prodigious. However, in harpooning one of these whales, either with the ordinary harpoon, the Fletcher fuse, or the javelin-bomb, of which there was an assortment on board, there would have been no danger to the men of the *Albatross*.

But what was the good of such useless massacre? Doubtless to show off the powers of the *aéronet* to the members of the Walton Institute. And so Robur gave orders for the capture of one of these monstrous cetaceans.

At the shout of "A whale! a whale!" Uncle Prudent and Phil Evans came out of their cabin. Perhaps there was a whaler in sight! In that case all they had to do to escape from their flying prison was to jump into the sea, and chance being picked up by the vessel.

The crew were all on deck. "Shall we try, sir?" asked Tom Turner.

"Yes," said Robur.

In the engine-room the engineer and his assistant were at their posts ready to obey the orders signaled to them. The *Albatross* dropped towards the sea, and descended about fifty feet above it.

There was no ship in sight—of that the two colleagues soon assured themselves—nor was there any land to be seen to which they could swim, providing Robur made no attempt to recapture them.

Several jets of water from the spout holes soon announced the presence of the whales as they came to the surface to breathe. Tom Turner and one of the men were in the bow. Within his reach was one of those javelin-bombs, of California make which are shot from an arquebus and which are shaped like a metallic cylinder terminated by a cylindrical bomb armed with a shaft having a barbed point. Robur was a little farther aft, and with his right hand signaled to the engineers, while with his left he directed the steersman. He thus controlled the *aéronet* in every way, horizontally and vertically, and it is almost impossible to conceive with what speed and precision the *Albatross* answered to his orders. She seemed a living being, of which he was the soul.

"A whale! a whale!" shouted Tom Turner, as the back of a cetacean emerged from the surface about four cable-lengths in front of the *Albatross*.

The *Albatross* swept towards it, and when she was within sixty feet of it she stopped dead.

Tom Turner seized the arquebus, which was resting against a cleat on the rail. He fired, and the projectile, attached to a long line, entered the whale's body. The bomb, filled with an explosive compound,

burst, and shot out a small harpoon with two branches, which fastened into the animal's flesh.

"Look out!" shouted Turner.

Uncle Prudent and Phil Evans, much against their will, became greatly interested in the spectacle.

The whale, seriously wounded, gave the sea such a slip with his tail, that the water dashed up over the bow of the aeronaut. Then he plunged to great depth, while the line, which had been previously wetted in a tub of water to prevent its taking fire, ran out like lightning. When the whale rose to the surface he started off at full speed in a northerly direction.

It may be imagined with what speed the Albatross was towed in pursuit. Besides, the propellers had been stopped. The whale was let go as he would, and the ship followed him. Turner stood ready to cut the line in case a fresh plunge should render this towing dangerous.

For half an hour, and perhaps for a distance of six miles, the Albatross was thus dragged along, but it was obvious that the whale was tiring. Then, at a gesture from Robur, the assistant engineers started the propellers astern, so as to oppose a certain resistance to the whale, who was gradually getting closer.

Soon the aeronaut was gliding about twenty-five feet above him. His tail was beating the waters with incredible violence, and as he turned over on his back an enormous wave was produced.

SUDDENLY the whale turned up again, so as to take a header, as it were, and then dived with such rapidity that Turner had barely time to cut the line.

The aeronaut was dragged to the very surface of the water. A whirlpool was formed where the animal had disappeared. A wave dashed up on to the deck as if the aeronaut were a ship driving against the wind and tide.

Luckily, with a blow of the hatchet the mate severed the line, and the Albatross, freed from her tug, sprang aloft six hundred feet under the impulse of her aerial screws. Robur had maneuvered his ship without losing his coolness for a moment.

A few minutes afterwards the whale returned to the surface—dead. From every side the birds flew down on to the carcass, and their cries were enough to deafen a congress. The Albatross, without stopping to share in the spoil, resumed her course to the west.

In the morning of the 17th of June, at about six o'clock, land was sighted on the horizon. This was the peninsula of Alaska, and the long range of breakers of the Aleutian Islands.

The Albatross glided over the barrier where the fur seals swarm for the benefit of the Russo-American Company. An excellent business is the capture of these amphibians, which are from six to seven feet long, russet in color, and weigh from three hundred to four hundred pounds. There they were in interminable files, ranged in line of battle, and countable by thousands.

Although they did not move at the passage of the Albatross, it was otherwise with the ducks, divers, and loons, whose husky cries filled the air as they disappeared beneath the waves and fled terrified from the aerial monster.

The twelve hundred miles of the Behring Sea between the first of the Aleutians and the extreme end

of Kamtschatka were traversed during the twenty-four hours of this day and the following night. Uncle Prudent and Phil Evans found that there was no present chance of putting their project of escape into execution. Flight was not to be thought of among the deserts of Eastern Asia, nor on the coast of the sea of Okhotsk. Evidently the Albatross was bound for Japan or China, and there, although it was not perhaps quite safe to trust themselves to the mercies of the Chinese or Japanese, the two friends had made up their minds to run if the aeronaut stopped.

But would she stop? She was not like a bird which grows fatigued by too long a flight, or like a balloon which has to descend for want of gas. She still had food for many weeks, and her organs were of marvellous strength, defying all weakness and weariness.

During the 18th of June she swept over the peninsula of Kamtschatka, and during the day there was a glimpse of Petropaulovski and the volcano of Klontschew. Then she rose again to cross the Sea of Okhotsk, running down by the Kurile lakes, which seemed to be a breakwater pierced by hundreds of channels. On the 19th, in the morning, the Albatross was over the strait of La Perouse between Saghalien and Northern Japan, and had reached the mouth of the great Siberian river, the Amoor.

Then there came on a fog so dense that the aeronaut had to rise above it. At the altitude she was there was no obstacle to be feared, no elevated monuments to hinder her passage, no mountains against which there was risk of being shattered in her flight. The country was only slightly varied. But the fog was very disagreeable, and made everything on board very damp.

All that was necessary was to get above this bed of mist, which was nearly thirteen hundred feet thick, and the aerial screws being increased in speed, the Albatross was soon clear of the fog and in the sunny regions of the sky. Under these circumstances, Uncle Prudent and Phil Evans would have found some difficulty in carrying out their plan of escape, even admitting that they could leave the aeronaut.

During the day, as Robur passed them, he stopped for a moment, and without seeming to attach any importance to what he said, addressed them carelessly as follows: "Gentlemen, a sailing-ship or a steam-ship caught in a fog from which it cannot escape is always much delayed. It must not move unless it keeps its whistle or its horn going. It must reduce its speed, and any instant a collision may be expected. The Albatross has none of these things to fear. What does fog matter to her? She can leave it when she chooses. The whole of space is hers." And Robur continued his stroll without waiting for an answer, and the puffs of his pipe were lost in the sky.

"Uncle Prudent," said Phil Evans, "it seems that this astonishing Albatross never has anything to fear."

"That we shall see!" answered the president of the Weldon Institute.

The fog lasted three days, the 19th, 20th, and 21st of June, with regrettable persistence. An ascent had to be made to clear the Japanese mountains of Fushiyama. When the curtain of mist was drawn aside there lay below them an immense city, with palaces,

villas, gardens, and parks. Even without seeing it Robur had recognized it by the barking of the innumerable dogs, cries of the birds of prey, and above all, by the cadaverous odor which the bodies of its executed criminals gave off into space.

The two colleagues were out on the deck while the engineer was taking his observations in case he thought it best to continue his course through the fog.

"Gentlemen," said he, "I have no reason for concluding from you that this town is Tokio, the capital of Japan."

Uncle Prudent did not reply. In the presence of the engineer he was almost choked, his lungs were short of air.

"This view of Tokio," continued Robur, "is very curious."

"Curious as it may be——" replied Phil Evans.

"It is not as good as Peking!" interrupted the engineer. "That is what I think, and very shortly you shall have an opportunity of judging."

Impossible to be more agreeable!

The Albatross then gliding southeast, had her course changed four points, so as to head to the eastward.

CHAPTER XII

Through the Himalayas

DURING the night the fog cleared off. There were symptoms of an approaching typhoon—a rapid fall of the barometer, a disappearance of vapor, large clouds of ellipsoid form clinging to a copper sky, and, on the opposite horizon, long streaks of carmine on a slate-colored field, with a large sector quite clear in the north. Then the sea was smooth and calm and at sunset assumed a deep scarlet hue.

Fortunately the typhoon broke near to the south, and had no other result than to sweep away the mist which had been accumulating during the last three days.

In an hour they had traversed the hundred and twenty-five miles of the Korean strait, and while the typhoon was raging on the coast of China, the Albatross was over the Yellow Sea. During the 22nd and 23rd she was over the Gulf of Pechelus, and on the 24th she was ascending the valley of the Petho on her way to the capital of the Celestial Empire.

Leaving over the rail, the two colleagues, as the engineer had told them, could see distinctly the immense city, the wall which divides it into two parts—the Manchoo town and the Chinese town—the twelve suburbs which surround it, the large boulevards which radiate from its center, the temples with their green and yellow roofs basking in the rising sun, the grounds surrounding the houses of the mandarins; then in the middle of the Manchoo town the eighteen hundred acres of the Yellow town, with its pagodas, its imperial gardens, its artificial lakes, its mountain of coal which towers above the capital; and in the center of the Yellow town, like a square of a Chinese puzzle enclosed in another, the Red town, that is the imperial palace, with all the peaks of its outrageous architecture.

Below the Albatross the air was filled with a singular harmony. It seemed to be a concert of *Æolian* harps. In the air were a hundred kites of different forms, made of sheets of palm-leaf, and having at their upper end a sort of bow of light wood with a thin slip of bamboo beneath. In the breath of the

wind these slips, with all their notes varied like those of a harmonicon, gave forth a most melancholy murmuring. It seemed as though they were breathing musical oxygen.

It suited Robur's whim to run close up to this aerial orchestra, and the Albatross slowed as she glided through the musical waves which the kites gave off through the atmosphere.

But immediately an extraordinary effect was produced amongst the innumerable population. Beatings of the tammoms and sounds of other formidable instruments of the Chinese orchestra, gun reports by the thousand, mortars fired in hundreds, all were brought into play to scare away the aeronaut. Although the Chinese astronomers may have recognized the aerial machine as the moving body that had given rise to such disputes, it was to the Celestial million, from the humblest tinker to the best-buttoned mandarin, an apocalyptic monster appearing in the sky of Buddha.

The crew of the Albatross troubled themselves very little about these demonstrations. But the strings which held the kites, and were tied to fixed pegs in the imperial gardens, were cut or quickly hauled in; and the kites were either drawn in rapidly, sounding louder as they sank, or else fell like a bird shot through both wings, whose long ends with its last sigh.

A noisy fanfare escaped from Tom Turner's trumpet, and drowned the final notes of the aerial concert. It did not interrupt the terrestrial fusillade. At least a shell exploded a few feet below the Albatross, and then she mounted into the inaccessible regions of the sky.

Nothing happened during the few following days of which the prisoners could take advantage. The aeronaut kept on her course to the southwest, thereby showing that it was intended to take her to India. Twelve hours after leaving Peking Uncle Prudent and Phil Evans caught a glimpse of the Great Wall in the neighborhood of Chen-Si. Then, avoiding the Long mountains, they passed over the valley of the Hoangho and crossed the Chinese border on the Tibet side.

Tibet consists of high table-lands without vegetation, with bare and then snowy peaks and barren ravines, torrents fed by glaciers, depressions with glowering beds of salt, lakes surrounded by luxuriant forests, with icy winds sweeping over all.

The barometer indicated an altitude of thirteen thousand feet above the level of the sea. At that height the temperature, although it was in the warmest months of the northern hemisphere, was only a little above freezing. This cold, combined with the speed of the Albatross, made the voyage somewhat trying, and although the friends had warm traveling wraps, they preferred to keep to their cabin.

It need hardly be said that to keep the aeronaut in this rarified atmosphere the ascension screws had to be driven at extreme speed. But they worked with perfect regularity, and the sound of their wings almost acted as a lullaby.

During this day, appearing from below about the size of a carrier pigeon, she passed over Garlock, a town of western Tibet, the capital of the province of Gari Khocum.

On the 27th of June, Uncle Prudent and Phil Evans sighted an enormous barrier, broken here and

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The COUNTRY OF THE BLIND

by H. G. Wells

Author of "The Time Machine," "A Story of the Stone Age," etc.



He gripped his staff still tighter, and advanced down the meadow towards the place of habitation, and directly he moved they converged upon him. . . . They were moving to open him quickly, groping, yet waving rigidly every man blindfolded except me. . . . It was like playing blind man's buff, with



THREE hundred miles and more from Chimbote, one hundred from snows of Copacabana, in the wildest wastes of Ecuador's Andes, there lies that mysterious mountain valley, cut off from the world of men, the Country of the Blind. Long years ago that valley lay so far open to the world that men might come at last through frightful gorges and over an icy pass into its equable meadows; and thither indeed men came, a family or so of Peruvian half-breeds fleeing from the lust and tyranny of an evil Spanish ruler. Then came the stupendous outbreak of Mindaumbae, when it was night in Quito for seventeen days, and the water was boiling at Yaguachi and all the fish floating dying even as far as Guayaquil; everywhere along the Pacific slopes there were land-slips and swift drawings and sudden floods, and one whole side of the old Amazon crest slipped and came down in thunder, and out off the Country of the Blind for ever from the exploring feet of men. But one of these early settlers had chanced to be on the higher side of the gorges when the world had so terribly shaken itself, and he perforce had to forget his wife and his child and all the friends and possessions he had left up there, and start life over again in the lower world. He started it again but ill, blindness overtook him, and he died of punishment in the mines; but the story he told beget a legend that lingers along the length of the Cordilleras of the Andes to this day.

He told of his reason for venturing back from that fastness, into which he had first been carried, lashed to a llama, beside a vast lake of gear, when he was a child. The valley, he said, had in it all that the heart of man could desire—sweet water, pasture, and even climate, slopes of rich brown soil with tangles of a shrub that bore an excellent fruit, and on one side great hanging forests of pine that held the avalanches high. Far overhead, on these sides, vast cliffs of gray-green rock were capped by cliffs of ice; but the glacier stream came not to them but flowed away by the further slopes, and only now and then huge ice masses fell on the valley side. In this

wallet he had a bar of native silver for which he would not account, he trusted there was none in the valley with something of the insistence of an impatient bar. They had all clubbed their money and ornaments together, having little need for such treasure up there, he said, to buy them holy help against their ill. I figure this dim-eyed young mountaineer, sun-burnt, gaunt, and anxious, but-brim clutched feverishly, a man all unused to the ways of the lower world, telling this story to some keen-eyed attentive priest before the great convulsion, I can picture him presently seeking to return with pious and infallible remedies against that trouble, and the infinite dismay with which he must have faced the tumbled vastness where the gorge had once come out. But the rest of his story of mischances is lost to me, save that I know of his ill death after several years. Poor stray from that remoteness! The stream that had once made the gorge now bursts from the mouth of a rocky cave, and the legend his poor, ill-told story set going developed into the legend of a race of blind men somewhere "over there," which one may still hear today.

AND amidst the little population of that now isolated and forgotten valley the disease ran its course. The old became groping and perished, the young saw but dimly, and the children that were born to them saw never at all. But life was very easy in that snow-stained basin, lost to all the world, with neither thorns nor briars, with no evil insects nor any beasts save the gentle breed of llamas they had lugged and thrust and followed up the beds of the shrunken rivers in the gorges up which they had come. The seeing had become perished so gradually that they scarcely noted their loss. They guided the sightless youngsters hither and thither until they knew the whole valley marvellously, and when at last sight died out among them the race lived on. They had even time to adapt themselves to the blind control of fire, which they made carefully in stoves of stone. They were a simple strain of people at the first, untrained, only slightly touched with the Spanish civilization, but with

something of a tradition of the arts of old Peru and of its lost philosophy. Generation followed generation. They forgot many things; they devised many things. Their tradition of the greater world they came from became mythical in color and uncertain. In all things save sight they were strong and able, and presently the chance

of birth and heredity sent one who had an original mind and who could talk and persuade among them, and then afterwards another. These two posited, leaving their effects, and the little community grew in numbers and in understanding, and met and settled social and economic problems that arose. Generation followed generation. There came a time when a child was born who was fifteen generations from that ancestor who went out of the valley with a bar of silver to seek God's aid, and who never returned. Thereabout it chanced that a man came into the community from the outer world. And this is the story of that man.

WE take many things for granted in this world. We accept many preconceived notions about an amazingly large number of things, which, like us not, seem to be genuinely wrong. If any story ever proved this point, "The Country of the Blind" certainly is that one. The author explains the well-known saying, "In the country of the blind, the one-eyed man is king." Indeed that statement is quite easy to believe and all logic should point that way. In reading this interesting story, you will soon find out how far wrong even seemingly good logic can be.

valley it neither rained nor snowed, but the abundant springs gave a rich green pasture, that irrigation would spread over all the valley space. The settlers did well indeed there. Their beasts did well and multiplied, and but one thing marred their happiness. Yet it was enough to mar it greatly. A strange disease had come upon them, and had made all the children born to them there—and indeed, several older children also—blind. It was to seek some charm or antidote against this plague of blindness that he had with fatigue and danger and difficulty returned down the gorge. In those days, in such cases, men did not think of germs and infections but of sins; and it seemed to him that the reason of this affliction must lie in the negligence of these priestless immigrants to set up a shrine so soon as they entered the valley. He wanted a shrine—a handsome, cheap, effectual shrine—to be erected in the valley; he wanted relics and such-like potent things of faith, blessed objects and mysterious medals and prayers. In his

He was a mountaineer from the country near Quintero, a man who had been down to the sea and had seen the world, a reader of books in an original way, an acute and enterprising man, and he was taken on by a party of Englishmen who had come out to Ecuador to climb mountains, to replace one of their three Swiss guides who had fallen ill. He climbed here and he climbed there, and then came the attempt on Paracotopel, the Matterhorn of the Andes, in which he was lost to the outer world. The story of the accident has been written a dozen times. Pointer's narrative is the best. He tells how the little party worked their difficult and almost vertical way up to the very foot of the last and greatest precipice, and how they built a little shelter amidst the snow upon a little shelf of rock, and, with a touch of real dramatic power, how presently they found Nance had gone from them. They shouted, and there was no reply; shouted and whistled, and for the rest of that night they slept no more.

As the morning broke they saw the traces of his fall. It seems impossible he could have entered a sound. He had slipped eastward toward the unknown side of the mountain; far below he had struck a steep slope of snow, and ploughed his way down it in the midst of a snow avalanche. His track went straight to the edge of a frightful precipice, and beyond that everything was hidden. Far, far below, and hazy with distance, they could see trees rising out of a narrow, shut-in valley—the lost Country of the Blind. But they did not know it was the lost Country of the Blind, nor distinguish it in any way from any other narrow streak of upland valley. Unnerved by this disaster, they abandoned their attempt in the afternoon, and Pointer was called away to the war before he could make another attack. To this day Paracotopel lifts an unconquered crest, and Pointer's shelter crumbles unveiled amidst the snows.

AND the man who fell survived.

At the end of the slope he fell a thousand feet, and came down in the midst of a cloud of snow upon a snow slope even steeper than the one above. Down this he was whirled, stunned and insensible, but without a bone broken in his body; and then at last came to gentler slopes, and at last rolled out and lay still, buried amidst a softening heap of the white masses that had accompanied and saved him. He came to himself with a dim fancy that he was ill in bed; then realized his position with a mountaineer's intelligence, and worked himself loose and, after a rest or so, out until he saw the stars. He rested flat upon his chest for a space, wondering where he was and what had happened to him. He explored his limbs, and discovered that several of his buttons were gone and his coat turned over his head. His knife had gone from his pocket and his hat was lost, though he had tied it under his chin. He recalled that he had been looking for loose stones to raise his piece of the shelter wall. His ice-axe had disappeared.

He decided he must have fallen, and looked up to see, exaggerated by the ghastly light of the rising moon, the tremendous flight he had taken. For a while he lay, gazing blankly at that vast pale cliff towering above, rising moment by moment out of a subsiding tide of darkness. Its phantasmal, mysterious beauty held him for a space, and then he was seized with a paroxysm of sobbing laughter. . . .

After a great interval of time he became aware

that he was near the lower edge of the snow. Below, down what was now a moonlit and practicable slope, he saw the dark and broken appearance of rock-strewn turf. He struggled to his feet, aching in every joint and limb, got down painfully from the heaped loose snow about him, went downward until he was on the turf, and there dropped rather than lay beside a boulder, drank deep from the flask in his inner pocket, and instantly fell asleep. . . .

He was awakened by the singing of birds in the trees far below.

He sat up and perceived he was on a little alp at the foot of a vast precipice, that was growed by the gully down which he and his snow had come. Over against him another wall of rock reared itself against the sky. The gorge between these precipices ran east and west and was full of the morning sunlight, which lit to the westward the mass of fallen mountain that closed the descending gorge. Below him it seemed there was a precipice equally steep, but behind the snow in the gully he found a sort of chimney-cleft dripping with snow-water down which a desperate man might venture. He found it easier than it seemed, and came at last to another desolate alp, and then after a rock climb of no particular difficulty, to a steep slope of trees. He took his bearings and turned his face up the gorge, for he saw it opened out above upon green meadows, among which he now glimpsed quite distinctly a cluster of stone huts of unfamiliar fashion. At times his progress was like clambering along the face of a wall, and after a time the rising sun ceased to strike along the gorge, the voices of the singing birds died away, and the air grew cold and dark about him. But the distant valley with its houses was all the brighter for that. He came presently to lakes, and among the rocks he noted—for he was an observant man—an unfamiliar form that seemed to chafe out of the crevices with intense green hands. He picked a frond or so and ground its stalk and found it helpful.

About midday he came at last out of the throat of the gorge into the plain and the sunlight. He was stiff and weary; he sat down in the shadow of a rock, filled up his flask with water from a spring and drank it down, and remained for a time resting before he went on to the houses.

They were very strange to his eyes, and indeed the whole aspect of that valley became, as he regarded it, queerer and more unfamiliar. The greater part of its surface was lush green meadow, starred with many beautiful flowers, irrigated with extraordinary care, and bearing evidence of systematic cropping pace by pace. High up and ringing the valley about was a wall, and what appeared to be a circumferential water-channel, from which the little trickles of water that fed the meadow plants came, and on the higher slopes above this floods of llamas cropped the scanty herbage. Sheds, apparently shelters or feeding-places for the llamas, stood against the boundary wall here and there. The irrigation streams ran together into a main channel down the centre of the valley, and this was enclosed on either side by a wall breast high. This gave a singularly urban quality to this secluded place, a quality that was greatly enhanced by the fact that a number of paths paved with black and white stones, and each with a curious little kerb at the side, ran hither and thither in an orderly manner. The houses of the central village were quite unlike the casual and higgledy-piggledy agglomeration of the

mountain villages he knew; they stood in a continuous row on either side of a central street of astonishing cleanness; here and there their parti-coloured facade was pierced by a door, and not a solitary window broke their even frontage. They were parti-coloured with extraordinary irregularity, smothered with a sort of plaster that was sometimes gray, sometimes drab, sometimes slate-coloured or dark brown, and it was the sight of this wild plastering first brought the word "blind" into the thoughts of the explorer. "The good man who did that," he thought, "must have been as blind as a bat."

HE descended a steep place, and so came to the wall and channel that ran about the valley, near where the latter spouted out its surplus contents into the depths of the gorge in a thin and wavering thread of cascade. He could now see a number of men and women resting on piled heaps of grass, as if taking a siesta, in the summer part of the meadow, and nearer the village a number of recumbent children, and then nearer at hand three men carrying poles on yokes along a little path that ran from the encircling wall towards the houses. These latter were clad in garments of flame cloth and boots and belts of leather, and they wore caps of cloth with back and ear flaps. They followed one another in single file, walking slowly and yawning as they walked, like men who have been up all night. There was something so reassuringly prosperous and respectable in their bearing that after a moment's hesitation Nunez stood forward as conspicuously as possible upon his rock, and gave vent to a mighty shout that echoed round the valley.

The three men stopped, and moved their heads as though they were looking about them. They turned their faces this way and that, and Nunez gesticulated with freedom. But they did not appear to see him for all his gestures, and after a time, detecting themselves towards the mountains far away to the right, they shouted as if in answer. Nunez bowed again, and then once more, and as he gesticulated ineffectually the word "blind" came up to the top of his thoughts. "The fools must be blind," he said.

When at last, after much shouting and wrath, Nunez crossed the stream by a little bridge, came through a gate in the wall, and approached them, he was sure that they were blind. He was sure that this was the Country of the Blind of which the legends told. Conviction had sprung upon him, and a sense of great and rather enviable adventure. The three stood side by side, not looking at him, but with their ears directed towards him, judging him by his unfamiliar steps. They stood close together like men a little afraid, and he could see by their eyelids closed and sudden, as though the very bells beneath had shrunk away. There was an expression near awe on their faces.

"A man," one said, in hardly recognisable Spanish—"a man it is—a man or a spirit—coming down from the rocks."

But Nunez advanced with the confident steps of a youth who enters upon life. All the old stories of the lost valley and the Country of the Blind had come back to his mind, and through his thoughts ran the old proverb, as if it were a refrain—

"In the Country of the Blind the One-eyed Man is King."

"In the Country of the Blind the One-eyed Man is King."

And very civilly he gave them greeting. He talked to them and used his eyes.

"Where does he come from, brother Pedro?" asked one.

"Down out of the rocks."

"Over the mountains I come," said Nunez, "out of the country beyond there—where men can see. From near Rogosa, where there are a hundred thousands of people, and where the city passes out of sight."

"Sight?" muttered Pedro. "Sight?"

"He comes," said the second blind man, "out of the rocks."

The cloth of their coats Nunez saw was curiously fashioned, each with a different sort of stitching.

They started him by a simultaneous movement towards him, each with a hand outstretched. He stopped back from the advance of those spry fingers.

"Come hither," said the third blind man, following his motion and clutching him loosely.

And they held Nunez and felt him over, saying no word further until they had done so.

"Carefully," he cried, with a finger in his eye, and found they thought that organ, with its fluttering lids, a queer thing in him. They went over it again.

"A strange creature, Correa," said the one called Pedro. "Feel the coarseness of his hair. Like a flame's hair."

"Rough he is as the rocks that begot him," said Correa, investigating Nunez's unkempt chin with a soft and slightly moist hand. "Perhaps he will grow finer." Nunez struggled a little under their examination, but they gripped him firmly.

"Carefully," he said again.

"He speaks," said the third man. "Certainly he is a man."

"Ugh!" said Pedro, at the roughness of his coat.

"And you have come into the world?" asked Pedro.

"Out of the world. Over mountains and glaciers; right over above there, half way to the sun. Out of the great big world that goes down, twelve days' journey to the sea."

They scarcely seemed to heed him. "Our fathers have told us men may be made by the forces of Nature," said Correa. "It is the warmth of things and moisture, and rottenness—rottenness."

"Let us lead him to the elders," said Pedro.

"Shout first," said Correa, "lest the children be afraid. This is a marvellous occasion."

So they shouted, and Pedro went first and took Nunez by the hand to lead him to the houses.

He drew his hand away. "I can see," he said.

"See?" said Correa.

"Yes, see," said Nunez, turning towards him, and stumbled against Pedro's pail.

"His senses are still imperfect," said the third blind man. "He stumbles, and talks unmeaning words. Lead him by the hand."

"As you will," said Nunez, and was led along, laughing.

It seemed they knew nothing of sight.

Well, all in good time he would teach them. He heard people shouting, and saw a number of figures gathering together in the middle roadway of the village.

He found it taxed his nerve and patience more than he had anticipated, that first encounter with the population of the Country of the Blind. The place seemed larger as he drew near to it, and the scattered plasterings gayer, and a crowd of children and men and women (the women and girls, he was pleased to note, had some of them quite sweet faces, for all that their eyes were shut and sunken) came about him, holding on to him, touching him with soft, sensitive hands, smelling at him, and listening at every word he spoke. Some of the maidens and children, however, kept aloof as if afraid, and indeed his voice seemed coarse, and rude beside their softer notes. They mobbed him. His three guides kept close to him with an effect of proprietorship, and said again and again, "A wild man out of the rocks."

"Bogota," he said. "Bogota. Over the mountain crests."

"A wild man—using wild words," said Pedro. "Did you hear that—Bogota? His mind is hardly formed yet. He has only the beginnings of speech."

A little boy nipped his hand. "Bogota?" he said mockingly.

"Ay! A city to your village. I come from the great world—where men have eyes and see."

"His name's Bogota," they said.

"He stumbled," said Correa, "stumbled twice as we came hither."

"Bring him to the elders."

AND they thrust him suddenly through a doorway into a room as black as pitch, save at the end there faintly glowed a fire. The crowd closed in behind him and shut out all but the faintest glimmer of day, and before he could arrest himself he had fallen headlong over the feet of a seated man. His arm, outflung, struck the face of some one else as he went down; he felt the soft impact of features and heard a cry of anger, and for a moment he struggled against a number of hands that clutched him. It was a one-sided fight. An jinking of the situation came to him, and he lay quiet.

"I fell down," he said; "I couldn't see in this pitchy darkness."

There was a pause as if the unseen persons about him tried to understand his words. Then the voice of Correa said: "He is but newly formed. He stumbles as he walks and mangles words that mean nothing, with his speech."

Others also said things about him that he heard or understood imperfectly.

"May I sit up?" he asked, in a pause. "I will not struggle against you again."

They consulted and let him rise.

The voice of an older man began to question him, and Nunez found himself trying to explain the great world out of which he had fallen, and the sky and mountains and sight and such-like marvels, to these elders who sat in darkness in the Country of the Blind. And they would believe and understand nothing whatever he told them, a thing quite outside his expectations. They would not even understand many of his words. For fourteen generations these people had been blind and cut off from all the string world; the names for all the things of sight had faded and changed; the story of the outer world was faded and changed to a child's story; and they had ceased to concern themselves with anything beyond the rocky slopes above their circling wall. Blind men of genius

had arisen among them and questioned the shreds of belief and tradition they had brought with them from their seeing days, and had dismissed all these things as idle fancies, and replaced them with new and saner explanations. Much of their imagination had starvelled with their eyes, and they had made for themselves new imaginations with their ever more sensitive ears and finger-tips. Slowly Nunez realised this; that his expectation of wonder and reverence at his origin and his gifts was not to be borne out; and after his poor attempt to explain sight to them, had been set aside as the confused version of a new-made being, describing the marvels of his incoherent sensations, he subsided, a little dashed, into listening to their instruction. And the eldest of the blind men explained to him life and philosophy and religion, how that the world (meaning their valley) had been first an empty hollow in the rocks, and then had come, first, inanimate things without the gift of touch, and flames and a few other creatures that had little sense, and then men, and at last angels, whom one could hear singing and making flustering sounds, but whom no one could touch at all, which puzzled Nunez greatly until he thought of the birds.

He went on to tell Nunez how this time had been divided into the warm and the cold, which are the blind equivalents of day and night, and how it was good to sleep in the warm and work during the cold, so that now, but for his advent, the whole town of the blind would have been asleep. He said Nunez must have been specially created to learn and serve the wisdom they had acquired, and that for all his mental incoherency and stumbling behavior he must have courage and do his best to learn, and at that all the people in the doorway murmured encouragingly. He said the night—for the blind call their day night—was now far gone, and it behooved every one to go back to sleep. He asked Nunez if he knew how to sleep, and Nunez said he did, but that before sleep he wanted food.

They brought him food—flame's milk in a bowl, and rough salted bread—and led him into a lonely place to eat out of their bearing, and afterwards to stumber until the chill of the mountain evening roused them to begin their day again. But Nunez shambled not at all.

Instead, he sat up in the place where they had left him, resting his limbs and turning the unanticipated circumstances of his arrival over and over in his mind.

Every now and then he laughed, sometimes with amusement, and sometimes with indignation.

"Unformed mind!" he said. "Got no senses yet! They little know they've been insulting their heaven-sent king and master. I see I must bring them to reason. Let me think—let me think."

He was still thinking when the sun set.

Nunez had an eye for all beautiful things, and it seemed to him that the glow upon the snowfields and glaciers that rose about the valley on every side was the most beautiful thing he had ever seen. His eyes went from that inaccessible glory to the village and irrigated fields, fast sinking into the twilight, and suddenly a wave of emotion took him, and he thanked God from the bottom of his heart that the power of sight had been given him.

He heard a voice calling to him from out of the village. "Ya ho there, Bogota! Come hither!"

At that he stood up smiling. He would show these

people once and for all what sight would do for a man. They would ask him, but not find him.

"You move not, Bogota," said the voice.

He laughed contentedly, and made two stealthy steps aside from the path.

"Tremble not on the grass, Bogota; that is not allowed."

Nuncio had scarcely heard the sound he made himself. He stopped amazed.

The owner of the voice came running up the pebbled path towards him.

He stepped back into the pathway. "Here I am," he said.

"Why did you not come when I called you?" said the blind man. "Must you be led like a child? Cannot you hear the path as you walk?"

Nuncio laughed. "I can see it," he said.

"There is no such word as see," said the blind man, after a pause. "Cease this folly, and follow the sound of my foot."

Nuncio followed, a little annoyed.

"My time will come," he said.

"You'll learn," the blind man answered. "There is much to learn in the world."

"Has no one told you, 'In the Country of the Blind the One-eyed Man is King?'"

"What is blind?" asked the blind man carelessly over his shoulder.

FOUR days passed, and the fifth found the King of the Blind still incognito, as a clumsy and useless stranger among his subjects.

It was, he found, much more difficult to prohibit himself than he had supposed, and in the meantime, while he meditated his *coup d'état*, he did what he was told and learnt the manners and customs of the Country of the Blind. He found working and going about at night a particularly irksome thing, and he decided that that should be the first thing he would change.

They led a simple, laborious life, these people, with all the elements of virtue and happiness, as these things can be understood by men. They toiled, but not oppressively; they had food and clothing sufficient for their needs; they had days and seasons of rest; they made much of music and singing, and there was love among them, and little children.

It was marvellous with what confidence and precision they went about their ordered world. Everything, you see, had been made to fit their needs; each of the radiating paths of the valley area had a constant angle to the others, and was distinguished by a special notch upon its kerbing; all obstacles and irregularities of path or meadow had long since been cleared away; all their methods and procedure arose naturally from their special needs. Their senses had become marvellously acute; they could hear and judge the slightest gesture of a man a dozen paces away—could hear the very beating of his heart. Imagination had long replaced expression with them, and touches gesture, and their work with hoe and spade and fork was as free and confident as garden work can be. Their sense of smell was extraordinarily fine; they could distinguish individual differences as readily as a dog can, and they went about the tending of the llamas, who lived among the rocks above and came to the wall for food and shelter, with ease and confidence. It was only when at last Nuncio

sought to assert himself that he found how easy and confident their movements could be.

He rebelled only after he had tried persuasion.

He tried at first on several occasions to tell them of sight. "Look you here, you people," he said. "There are things you do not understand in me."

Once or twice one or two of them attended to him; they sat with faces downcast and ears turned indifferently towards him, and he did his best to tell them what it was to see. Among his listeners was a girl, with eyelids less red and sunken than the others, so that one could almost fancy she was hiding eyes, whom especially he hoped to persuade. He spoke of the beauties of sight, of watching the mountains, of the sky and the sunrise, and they heard him with amazed incredulity that presently became condemnatory. They told him there were indeed no mountains at all, but that the end of the rocks where the llamas grazed was indeed the end of the world; thence sprang a cavernous roof of the universe, from which the dew and the avalanches fell, and when he maintained stoutly the world had neither end nor roof such as they supposed, they said his thoughts were wicked. So far as he could describe sky and clouds and stars to them it seemed to them a hideous void, a terrible blankness in the place of the smooth roof to things in which they believed—it was an article of faith with them that the cavern roof was exquisitely smooth to the touch. He saw that in some manner he shocked them, and gave up that aspect of the matter altogether, and tried to show them the practical value of sight. One morning he saw Pedro in the path called Seventeen and coming towards the central houses, but still too far off for hearing or scent, and he told them as much. "In a little while," he prophesied, "Pedro will be here." An old man remarked that Pedro had no business on Path Seventeen, and then, as if in confirmation, that individual as he drew near turned and went transversely into path Ten, and so back with sinible paces towards the outer wall. They mocked Nuncio when Pedro did not arrive, and afterwards, when he asked Pedro questions to clear his character, Pedro denied and outwitted him, and was afterwards hostile to him.

Then he induced them to let him go a long way up the sloping meadows towards the wall with one complacent individual, and to him he promised to describe all that happened among the houses. He noted certain groups and comings, but the things that really seemed to signify to these people happened inside of or behind the windowless houses—the only things they took note of to test him by—and of these he could see or tell nothing; and it was after the failure of this attempt, and the ridicule they could not repress, that he resorted to force. He thought of securing a spade and suddenly writing one or two of them to earth, and so in fair combat showing the advantage of eyes. He went so far with that resolution as to seize his spade, and then he discovered a new thing about himself, and that was that it was impossible for him to hit a blind man in cold blood.

He hastened, and found them all aware that he had snatched up the spade. They stood short, with their heads on one side, and bent ears towards him for what he would do next.

"Put that spade down," said one, and he felt a sort of helpless horror. He came near obedience.

Then he thrust one backwards against a house wall, and fled past him and out of the village.

HE went advent one of their meadows, leaving a track of trampled grass behind his feet, and presently sat down by the side of one of their ways. He felt something of the buoyancy that comes to all men in the beginning of a fight, but more perplexity. He began to realize that you cannot even fight happily with creatures who stand upon a different mental basis to yourself. Far away he saw a number of men carrying spades and sticks come out of the street of houses, and advance in a spreading line along the several paths towards him. They advanced slowly, speaking frequently to one another, and ever and again the whole cordon would halt and sniff the air and listen.

The first time they did this Nuncia laughed. But afterwards he did not laugh.

One struck his trail in the meadow grass, and came stooping and feeling his way along it.

For five minutes he watched the slow extension of the cordon, and then his vague disposition to do something forthwith became frantic. He stood up, went a space or so towards the circumferential wall, turned, and went back a little way. There they all stood in a cordon, still and humming.

He also stood still, gripping his spade very tightly in both hands. Should he charge them?

The pulse in his ears ran into the rhythm of "In the Country of the Blind the One-eyed Man is King."

Should he charge them?

He looked back at the high and unclimbable wall behind—unclimbable because of its smooth plastering, but withal pierced with many little doors, and at the approaching line of seekers. Behind these others were now coming out of the street of houses.

Should he charge them?

"Bogota!" called one. "Bogota! where are you?"

He gripped his spade still tighter, and advanced down the meadows towards the place of habitation, and directly he moved they converged upon him. "I'll hit them if they touch me," he swore; "by Heaven, I will. I'll hit 'em." He called aloud, "Look here, I'm going to do what I like in this valley. Do you hear? I'm going to do what I like and go where I like!"

They were moving in upon him quickly, groping, yet moving rapidly. It was like playing blind man's buff, with every one blindfolded except one. "Get hold of him!" cried one. He found himself in the arc of a loose curve of pursuers. He felt suddenly he must be active and resolute.

"You don't understand," he cried in a voice that was meant to be great and resolute, and which broke. "You are blind, and I can see. Leave me alone!"

"Bogota! Put down that spade, and come off the grass!"

The last order, grotesque in its urban familiarity, produced a gust of anger.

"I'll hurt you," he said, sobbing with emotion. "By Heaven, I'll hurt you. Leave me alone!"

He began to run, not knowing clearly where to run. He ran from the nearest blind man, because it was a horror to hit him. He stopped, and then made a dash to escape from their closing ranks. He made for where a gap was wide, and the men on either side, with a quick perception of the approach of his paces, rushed in on one another. He sprang forward, and then saw he must be caught, and *smack!* the spade had struck. He felt the soft thud of hand and arm,

and the man was down with a yell of pain, and he was through.

Through! And then he was close to the street of houses again, and blind men, whirling spades and stakes, were running with a sort of reasoned swiftness hither and thither.

He heard steps behind him just in time, and found a tall man rushing forward and swiping at the sound of him. He lost his nerve, hurled his spade a yard wide at his antagonist, and whirled about and fled, fairly yelling as he dodged another.

He was panic-stricken. He ran furiously to and fro, dodging when there was no need to dodge, and in his anxiety to see on every side of him at once, stumbling. For a moment he was down and they heard his fall. Far away in the circumferential wall a little doorway looked like heaven, and he set off in a wild rush for it. He did not even look around at his pursuers until it was gained, and he had stumbled across the bridge, clambered a little way among the rocks, to the surprise and dismay of a young llama, who went leaping out of sight, and lay down sobbing for breath.

And on his *route d'été* came to an end.

He stayed outside the wall of the valley of the Blind for two nights and days without food or shelter, and meditated upon the unexpected. During these meditations he repeated very frequently and always with a profounder note of derision the exploded proverb: "In the Country of the Blind the One-eyed Man is King." He thought chiefly of ways of fighting and conquering these people, and it grew clear that for him no practicable way was possible. He had no weapons, and now it would be hard to get one.

THE cancer of civilization had got to him even in Bogota, and he could not find it in himself to go down and assassinate a blind man. Of course, if he did that, he might then dictate terms on the threat of assassinating them all. But—sooner or later he must sleep . . .

He tried also to find food among the pine trees, to be comfortable under pine boughs while the frost fell at night, and—with less confidence—to catch a llama by artifice in order to try to kill it—perhaps by hammering it with a stone—and so finally, perhaps, to eat some of it. But the llamas had a doubt of him and regarded him with distrustful brown eyes, and spat when he drew near. Fear came on him the second day and fits of shivering. Finally he crawled down to the wall of the Country of the Blind and tried to make terms. He crawled along by the stream, shouting, until two blind men came out to the gate and talked to him.

"I was mad," he said. "But I was only newly made."

They said that was better.

He told them he was wiser now, and repented of all he had done.

Then he wept without intention, for he was very weak and ill now, and they took that as a favourable sign.

They asked him if he still thought he could "see."

"No," he said. "That was folly. The world means nothing—less than nothing."

They asked him what was overhead.

"About ten times ten the height of a man there is a roof above the world—and rock—and very, very

smooth." "He burst again into hysterical tears. "Before you ask me any more, give me some food or I shall die."

He expected dire punishments, but these blind people were capable of toleration. They regarded his rebellion as but one more proof of his general adroitness and inferiority; and after they had whipped him they appointed him to do the simplest and heaviest work they had for any one to do, and he, seeing no other way of living, did submissively what he was told.

He was ill for some days, and they nursed him kindly. That refined his submission. But they insisted on his lying in the dark, and that was a great misery. And blind philosophers came and talked to him of the wicked levity of his mind, and reproved him so impressively for his doubts about the lad of rock that covered their cosmic casserole that he almost doubted whether indeed he was not the victim of hallucination in not seeing it overhead.

So Nunez became a citizen of the Country of the Blind, and these people ceased to be a generalized people and became individuals and familiar to him, while the world beyond the mountains became more and more remote and unreal. There was Jacob, his master, a kindly man when not annoyed; there was Pedro, Jacob's nephew, and there was Medina-saroté, who was the youngest daughter of Jacob. She was little esteemed in the world of the blind, because she had a clear-cut face, and lacked that satisfying, glossy smoothness that is the blind man's ideal of feminine beauty, but Nunez thought her beautiful at first, and presently the most beautiful thing in the whole creation. Her closed eyelids were not sunken and red after the common way of the valley, but by as though they might open again at any moment; and she had long eyelashes, which were considered a grave disfigurement. And her voice was strong, and did not satisfy the acute hearing of the valley swains. So that she had no lover.

There came a time when Nunez thought that, could he win her, he would be resigned to live in the valley for all the rest of his days.

He watched her; he sought opportunities of doing her little services, and presently he found that she observed him. Once at a noon-day gathering they sat side by side in the dim starlight, and the music was sweet. His hand came upon hers and he dared to clasp it. Then very tenderly she returned his pressure. And one day, as they were at their meal in the darkness, he felt her hand very softly seeking him, and as it chanced the fire leapt then and he saw the tenderness of her face.

He sought to speak to her.

He went to her one day when she was sitting in the summer moonlight spinning. The light made her a thing of silver and mystery. He sat down at her feet and told her he loved her, and told her how beautiful she seemed to him. He had a lover's voice, he spoke with a tender reverence that came near to awe, and she had never before been touched by adoration. She made him no definite answer, but it was clear his words pleased her.

After that he talked to her whenever he could take an opportunity. The valley became the world for him, and the world beyond the mountains where men lived in sunlight seemed no more than a fairy tale he would some day pour into her ears. Very tentatively and timidly he spoke to her of sight.

Sight seemed to her the most poetical of fancies,

and she listened to his description of the stars and the mountains and her own sweet white-lit beauty as though it was a guilty indulgence. She did not believe, she could only half understand, but she was mysteriously delighted, and it seemed to him that she completely understood.

His love lost its awe and took courage. Presently he was for demanding her of Jacob and the elders in marriage, but she became fearful and delayed. And it was one of her elder sisters who first told Jacob that Medina-saroté and Nunez were in love.

There was from the first very great opposition to the marriage of Nunez and Medina-saroté; not so much because they valued her as because they held him as a being apart, an idiot, incompetent thing below the permissible level of a man. Her sisters opposed it bitterly as bringing discredit on them all; and old Jacob, though he had formed a sort of liking for his clumsy, obedient son, shook his head and said the thing could not be. The young men were all angry at the idea of corrupting the race, and one went so far as to revile and strike Nunez. He struck back. Then for the first time he found an advantage in seeing, even by twilight, and after that fight was over no one was disposed to raise a hand against him. But they still found his marriage impossible.

Old Jacob had a tenderness for his last little daughter, and was grieved to have her weep upon his shoulder.

"You see, my dear, he's an idiot. He has delusions; he can't do anything right."

"I know," wept Medina-saroté. "But he's better than he was. He's getting better. And he's strong, dear father, and kind—stronger and kinder than any other man in the world. And he loves me—and father, I love him."

OLD Jacob was greatly distressed to find her in-consolable, and, besides—what made it more distressing—he liked Nunez for many things. So he went and sat in the windowless council-chamber with the other elders and watched the trend of the talk, and said, at the proper time, "He's better than he was. Very likely, some day, we shall find him as sure as ourselves."

Then afterwards one of the elders, who thought deeply, had an idea. He was the great doctor among these people, their medicine-man, and he had a very philosophical and inventive mind, and the idea of curing Nunez of his peculiarities appealed to him. One day when Jacob was present he returned to the topic of Nunez.

"I have examined Bogota," he said, "and the case is clearer to me. I think very probably he might be cured."

"That is what I have always hoped," said old Jacob.

"His brain is affected," said the blind doctor.

The elders murmured assent.

"Now, what affects it?"

"Ah!" said old Jacob.

"This," said the doctor, answering his own question. "Those queer things that are called the eyes, and which exist to make an agreeable soft depression in the face, are diseased, in the case of Bogota, in such a way as to affect his brain. They are greatly distended, he has eyelashes, and his eyelids move, and consequently his brain is in a state of constant irritation and distraction."

"Yes?" said old Jacob. "Yes?"

"And I think I may say with reasonable certainty that, in order to cure him completely, all that we need do is a simple and easy surgical operation—namely, to remove these irritant bodies."

"And then he will be sane?"

"Then he will be perfectly sane, and a quite admirable citizen."

"Thank Heaven for science!" said old Jacob, and went forth at once to tell Nunez of his happy hopes.

But Nunez's manner of receiving the good news struck him as being cold and disappointing.

"One might think," he said, "from the tone you take, that you did not care for my daughter."

It was Medina-aroté who persuaded Nunez to face the blind surgeons.

"You do not want me," he said, "to lose my gift of sight?"

She shook her head.

"My world is sight."

Her head drooped lower.

"There are the beautiful things, the beautiful little things—the flowers, the lichens among the rocks, the lightness and softness on a piece of fur, the far sky with its drifting down of clouds, the sunsets and the stars. And there is you. For you alone it is good to have sight, to see your sweet, serene face, your kindly lips, your dear, beautiful hands folded together. . . . It is these eyes of mine you won, these eyes that hold me to you, that these idiots seek. Instead, I must touch you, hear you, and never see you again. I must come under that roof of rock and stone and darkness, that horrible roof under which your imagination stoops. . . . No; you would not have me do that?"

A disagreeable doubt had arisen in him. He stopped, and left the thing a question.

"I wish," she said, "sometimes——" She paused.

"Yes," said he, a little apprehensively.

"I wish sometimes—you would not talk like that."

"Like what?"

"I know it's pretty—it's your imagination. I love it, but now——"

He felt cold. "Never!" he said faintly.

She sat quite still.

"You mean—you think—I should be better, better perhaps——"

He was realising things very swiftly. He felt anger, indeed, anger at the dull course of fate, but also sympathy for her lack of understanding—a sympathy near akin to pity.

"Dear," he said, and he could see by her whiteness how intensely her spirit pressed against the things she could not say. He put his arms about her, he kissed her ear, and they sat for a time in silence.

"If I were to consent to this?" he said at last, in a voice that was very gentle.

She flung her arms about him, weeping wildly. "Oh, if you would," she sobbed, "if only you would!"

FOR a week before the operation that was to raise him from his servitude and inferiority to the level of a blind citizen, Nunez knew nothing of sleep, and all through the warm sunlit hours, while the others slumbered happily, he sat brooding or wandered aimlessly, trying to bring his mind to bear on his dilemma. He had given his answer, he had given his consent, and still he was not sure. And at last work-time was over, the sun rose in splendour over the

golden crests, and his last day of vision began for him. He had a few minutes with Medina-aroté before she went apart to sleep.

"To-morrow," he said, "I shall see no more."

"Dear heart!" she answered, and pressed his hands with all her strength.

"They will hurt you but little," she said; "and you are going through this pain—you are going through it, dear lover, for me. . . . Dear, if a woman's heart and life can do it, I will repay you. My dearest one, my dearest with the tender voice, I will repay."

He was drenched in pity for himself and her.

He held her in his arms, and pressed his lips to hers, and looked on her sweet face for the last time. "Good-bye!" he whispered at that dear sight, "good-bye!"

And then in silence he turned away from her.

She could hear his slow retreating footsteps, and something in the rhythm of them threw her into a passion of weeping.

He had fully meant to go to a lonely place where the meadows were beautiful with white narcissus, and there remain until the hour of his sacrifice should come, but as he went he lifted up his eyes and saw the morning, the morning like an angel in golden armour, marching down the steps. . . .

It seemed to him that before this splendour he, and this blind world in the valley, and his love, and all, were no more than a pit of sin.

He did not turn aside as he had meant to do, but went on, and passed through the wall of the circumference and out upon the rocks, and his eyes were always upon the sunlit ice and snow.

He saw their infinite beauty, and his imagination soared over them to the things beyond he was now to resign for ever.

He thought of that great free world he was parted from, the world that was his own, and he had a vision of those further slopes, distance beyond distance, with Bogota, a place of multitudinous stirring beauty, a glory by day, a luminous mystery by night, a place of palaces and fountains and statues and white houses, lying beautifully in the middle distance. He thought how for a day or so one might come down through passes, drawing ever nearer and nearer to its busy streets, and ways. He thought of the river journey, day by day, from great Bogota to the still water world beyond, through towns and villages, forest and desert places, the rushing river day by day, until its banks receded and the big steamers came splashing by, and one had reached the sea—the limitless sea, with its thousand islands, its thousands of islands, and its ships seen dimly far away in their incessant journeyings round and about that greater world. And there, unpert by mountains, one saw the sky—the sky, not such a disc as one saw it here, but an arch of immeasurable blue, a deep of depths in which the circling stars were floating. . . .

His eyes scrutinised the great curtain of the mountains with a keener inquiry.

For example, if one went so, up that gully and to that chimney there, then one might come out high among those stunted pines that ran round in a sort of shelf and rose still higher and higher as it passed above the gorge. And then? That talus might be managed. Thence perhaps a climb might be found to take him up to the precipice that came below the snow; and if that chimney failed, then another farther to the east might serve his purpose better. And

them? Then one would be out upon the amber-lit snow there, and half-way up to the crest of those beautiful desolations.

He glanced back at the village, then turned right round and regarded it steadfastly.

He thought of Medana-saroté, and she had become small and remote.

He turned again towards the mountain wall, down which the day had come to him.

Then very circumspectly he began to climb.

When sunset came he was no longer climbing, but he was far and high. He had been higher, but he was still very high. His clothes were torn, his limbs were blood-stained, he was bruised in many places, but he lay as if he were at his ease, and there was a smile on his face.

From where he rested the valley seemed as if it

were as a pit and nearly a mile below. Already it was dim with haze and shadow, though the mountain summits around him were things of light and fire. The mountain summits around him were things of light and fire, and the little details of the rocks near at hand were dratched with subtle beauty—a vein of green stineral piercing the gray, the flash of crystal faces here and there, a minute, minutely-beautiful orange lichen close beside his face. There were deep mysterious shadows in the gorge, blue deepening into purple, and purple into a luminous darkness, and overhead was the dimitable vastness of the sky. But he heeded these things no longer, but lay quite inactive there, smiling as if he were satisfied merely to have escaped from the valley of the Blind in which he had thought to be King.

The glow of the sunset passed, and the night came, and still he lay peacefully contented under the cold clear stars.

THE END

The Metal Emperor

By A. MERRITT

Author of "The Moon Pool," "The Face in the Abyss," etc.

If you were amazed and thrilled by "The Moon Pool," you will find that "The Metal Emperor" far surpasses even the former wonderful story.

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The questions which we give below are all answered on the pages as listed at the end of the questions. Please see if you can answer the questions first without looking for the answer, and see how well you check up on your general knowledge:

1. What is the author's name? (See page 833)
2. What wood processor was recorded when the Tay bridge blew down? (See page 833)
3. At what velocity would a current of air have to rise to support a man standing erect? (See page 833)
4. What weight can the stag beetle lift compared to its own weight? (See page 833)
5. How many beats of the wing per minute do the albatross, the pelican, the bee, and the house-fly give respectively? (See page 833)
6. What American ballooning perished in Lake Michigan? (See page 834)
7. What is the average fall of the thermometer for each 70 meters elevation above the surface of the earth? (See page 844)
8. What is the name of the famous mountain called the Matterhorn of the Andes? (See page 852)
9. What is the famous proverb about the One-eyed man? (See page 853)
10. What is emotion? How is it produced? What glands are involved? (See page 860)
11. When do sound vibrations cease to affect our senses? When do other vibrations begin to affect our senses? (See page 863)
12. What are the three ingredients of gunpowder? (See page 868)

HICKS' INVENTIONS WITH A KICK

By Henry Hugh Simmons

THE ELECTRO-HYDRAULIC BANK PROTECTOR



It was in vain that Griffin exerted his utmost strength to escape the voracious embrace . . . and it was not long before he was covered with glue from head to foot . . . The two were executing a stringy two-step up the margin. Their shoes got stuck on the floor by the lurch, after many men were running off them, and this made their efforts increasingly more frantic.



HE said brought in a card. I took it, read it, and threw it in the waste basket.

"Tell him I am on my vacation," I said in a voice loud enough to be heard three rooms off. And just at that moment Hicks entered.

I tell you I sat in my chair like petrified. Since that episode of the Automatic Apartment, I had not seen Hicks—at close range, at least. For nine months I had been daily locking myself for having allowed him to talk me into fixing up another demonstration for him—and that after the first one had resulted in disaster. I had been dodging those people on the street myself ever since, and in my walks about town I was in a continuous sweat lest I meet one of them face to face. Guess my feelings, then, at that man's colossal nerve when he appeared uninvited just as I was throwing his card into the waste basket.

As I sat there speechless, Hicks advanced and proffered me a small flat package done up in fancy paper and tied with red string. Mechanically, I took that package and untied the thread. Methodically, slowly I unwrapped it. Hicks, in the meantime, had sat down in my easiest chair and gravely lit a cigarette. Inside the package there was a fancy box. I opened it. A golden cigarette case came into view. In the middle of the cover, beautifully engraved, my eye read my name "Fred C. O'Keefe." With fastidious care, I lifted the cover. Twenty cigarettes of the well-known super-expensive brand "Aldullah" were neatly arranged in two rows.

The click of the box, as I snapped it shut, brought me back to my senses.

"Hicks," I said hoarsely, "get! Get out—this instant!" And I shoved the case toward him on the table.

I had expected a brazen smile and a smart answer, but I was mistaken. Hicks looked sad as he replied: "O'Keefe, won't you let me apologize? Won't you give me a chance to make repairs? I never did you any harm intentionally, and I want to make good that which I did unwittingly. Can't you pardon a man? Say so if you will and I will go, right now. Even so I wish you would accept my little peace offering—I picked it, as you see, especially for you."

Appeal to my generosity and I am sunk. I suppose it's that Celtic blood in me or something, but that's the way it is. I knew he had won right then.

"I'll go if you say so," Hicks murmured, rising. "I came here only to . . ." He seemed overcome with emotion.

"Stay!" I said. "Don't think that I am ungenerous. Give me your hand—I know you meant no harm."

Hicks shook hands with me so hard that I got a headache.

"But," I said, "that cigarette case—I really cannot take it, old man, such a costly present—I really cannot."

"You must!" eagerly returned Hicks. "Can't let you refuse—absolutely can't. On my account, you spoiled a suit. . . ."

"Two suits," I said, reminiscently.

"Two suits," said Hicks, reddening a little, "you

are right. Now I know you wouldn't let me pay for that suit—I mean, those suits—so you really must take the load off my mind by accepting this little present from me."

"Well," . . . I said.

"And besides, there is something else about that case. You haven't seen all. Turn it over and have a look."

The Reason Why

I TURNED the cigarette case over. On the back of it I found engraved:

COMMEMORATING THE INITIATION OF THE HICKS
ELECTRO-HYDRAULIC BANK PROTECTOR

I read and below was the cryptic emblem:



"What, been initiating another invention?" I said. "How did it come off this time?"

"Er . . . not been, exactly, O'Keefe," said Hicks, "but going to. Now just a minute,—don't say anything yet—this is different," he went on hastily, as he noticed clouds forming on my brow. "This is different. The burr child dreads the fire, O'Keefe, and I have learned my lesson. This is all right, and I think you will believe me, when I tell you that I have a banker backing me, and that the installation of the Protector in a bank is just being finished. And—I don't want you to invite anybody—I am doing the inviting myself this time."

"Where? What bank? What banker?" I asked, my interest aroused, for you know bankers are serious men—the most serious men in the world.

"E. F. Croffitt, of the Suburban National," said Hicks.

He couldn't have said more if he had suffered a month. I knew E. F. Croffitt. In fact, he had recently refused to extend

my note and that under aggravating circumstances. A more bloodless, cold-hearted, pagheaded right-wad surely never trod the earth. If he had committed himself so far as to allow anything to be installed in his bank, surely it must be all right. Take the sporting blood in his system, diluted with one hundred parts of distilled water, would have made exactly one small teaspoonful.

"If you want me to be there, Hicks, count on me. Where E. F. Croffitt takes a chance, I will, any time."

"Thanks, old boy!" Hicks heartily responded. "I am glad to say that the others seemed to feel the same way. You know, O'Keefe, life means nothing to me unless I have the whims of my friends. That's why I came here. And that's why I wrote

WITHOUT a question, the Electro-Hydraulic Bank Protector is the best of the Hicks series so far. If you enjoy rough and tumble humor, with side-splitting situations, you will enjoy this story. For, as usual, it contains plenty of good advice, and the authors does not look as foolish as it may seem. Moreover, there is a double-barreled ending to the tale, which will make you laugh loud and long.

the others, sending each of the men a golden cigarette case like yours and each of the women a golden vanity case. I have heard from four, and I expect to hear from the rest to-day. I am sure I will."

The Great Day

AS we agreed, I made my appearance at the Fourth Street branch of the Suburban National Bank at 9 o'clock Friday morning. There was one drawback—it was Friday—and I don't like Fridays, and on my way to the bank I noticed it was the 13th. I am not superstitious, but I was worried for a while about that combination. But finally I told myself that it was all nonsense. Besides, I was soon too deeply interested in what there was to see to be worrying about a silly matter of dates. The Suburban National had been adding to its floor space, and the new division was all but ready to be thrown open to the public. Part of the space was made a long room parallel with the street, and this was faced by the usual row of some twelve or fifteen clerks' and tellers' windows. To my cursory glance, indeed, everything looked very much like in any ordinary bank, though I remember being struck by the fact that the partition ran right up to the ceiling and though of ornate design, was unbroken except for the windows, and had an uncommonly solid appearance. My attention was also arrested by what appeared to me as an unusual number of electric-light columns, also of highly ornamental character, grouped along in front of the partition. My reflections on the reason for all this were presently terminated when Hicks, who had called me as I entered, came rushing up and led me to meet the company. Some twenty people were present, of whom I already knew about half. I braced myself for a shock as I came face to face with Irvine. But he shook hands with me quite amiably. So did Hicks' uncle Jeremiah, who had also been present at the inauguration of the Automatic Apartment. I nearly backed out as I met Smith—he is a violent man, you know—but even he took my proffered hand. It's wonderful what those cigarette costs had done, I mentally reflected. This time I had promised myself not to bring anyone along, and so neither aunt Zelinda nor aunt Eulalia were there. Professor Dinker and his favorite also were missing. I guess their experiences with the Automatic Apartment had been too much for their dignity. However, this lack was made up for by the company the banker had supplied. There were two other presidents of banks. One was Mr. Quagge, a little skinny, hungry-looking individual, who had the appearance of not being able to count ten, but had on numerous occasions been known to multiply his assets by that figure. The other was Mr. Kragg, who was fat, coarse, wide, and an incessant talker. Three skinny females to whom I was introduced proved to be his wife, who was gushing about art, and his daughters, who had their father's face and their mother's form, with the addition of bony legs—not the best possible combination, I thought. Among the remaining people, I knew Mr. Schmautz, the chief teller of the Suburban National. And then there was E. F. Croffitt himself, a tallish, bald-headed man of forty-five, who wore glasses and whose peculiar mincing gait contrasted strangely with his big feet and ungainly figure, and whose painful attempts at an engaging smile immediately

brought to mind the picture of an amiable and tender-hearted snake beaming upon its intended victim. He was here, there, and everywhere, conversing in an oily and yet rasping voice, full of pride and anticipation. And now he addressed the company. He enlarged upon the crime situation in general and bank-holdups in particular, and at the end of his sonorous remarks, introduced Hicks.

"Unaccustomed as I Am—"

I REALLY must apologize when I address you," modestly began the inventor. "I am no orator, and Mr. Croffitt has presented better than I could, the underlying reasons for the invention of the Hicks Electro-Hydraulic Bank Protector. But I wish to sketch to you the central idea back of the invention itself. Mr. Croffitt has referred to the fruitless attempts of the police to curb robberies. The police are doing all they can under present conditions. But they are undermanned and therefore handicapped to a great extent. And a more serious condition even, is the absolute failure of the courts to adequately punish those criminals whom, often at great expense and risk of life, the police do apprehend. When I say this, I am only repeating facts with which you are all but too familiar.

"Now, what," inquired Hicks, "is the remedy in the face of a situation such as this?" He paused for a moment, waiting for an answer. "If the police are unable to catch the criminals, and the courts are unable to mete out proper punishment to inflict sufficient respect in the minds of those who intend to do evil, then it is up to the citizens to catch the criminal, so quietly and unobtrusively defeat him, that even after he has served his term, he will remember the experience with feelings of unalloyed and unobjectionable terror."

Hicks had raised his voice and emphasized these last remarks, and now he stopped to take a breath. E. F. Croffitt and the other two bankers nodded gravely in a pensive way, and a general murmur of assent ran through the company.

"The more I thought of this idea," Hicks continued, "the more I was taken with it. How to defend the bank and its treasures against the holdup man became the subject of my thoughts by day and my dreams by night. What complicated the problem was that while apprehending the wrong-doer with unflinching certainty and creating in the mind of every criminal the feeling that the bank, instead of being a fit prey for his nefarious activity, was a place to be shunned like the plague, it was necessary to guard the public and the bank employees from injury. For a while, I will frankly admit, it seemed hopeless. It would take too long to even sketch an outline of my labors, the many false scents I followed, as it were. Let it suffice that after a vast expenditure of concentrated mental effort, I finally developed the Hicks Electro-Hydraulic Bank Protector, a system of bank protection totally differing from others, a weird combination, you may think at first blush, yet I am sure you will find it a logical remedy. Strange diseases call for strange medicines.

"You may wonder, for instance, at the idea of hydraulics, of water under pressure, for a purpose such as this. At first it seems odd. But let us consider for a moment. When there is a riot, and it all seems hopeless, when the police, with night sticks and

revolvers, are unable to cope with the situation, when the unreasoning mob is no longer deterred by fear of death and injury, than who is called in? Why, the Fire Department!"

As Hicks made this pronouncement, a pleased hum of approbation could be heard. The idea had struck home.

"When the inmates of a jail or a madhouse grow rebellious and raise pandemonium in their cells day and night, and no punitive measures seem to take effect, when isolation, starvation, straightjackets are of no use, then what is?" Hicks continued, and answering his own question: "Why, water, streams of cold water, big cold streams under high pressure. As soon as the water hose is brought in, the fight, the riot, ends. No fight has ever been known to last one minute after the fire hose began to play on the fighters. Men will fight in a hail of bullets, they will brave death from bombs and grenades, they will keep on fighting after they are bleeding from a dozen wounds. But turn a big, powerful stream of cold water on them, and the most ferocious fighter quits."

"I use electricity to bring about that sudden release of the water that is necessary to obtain the desired effect. However, it also operates the armor-plate shutter I have provided for each window. The idea of so protecting the tellers' windows is not new. It has been tried out, but, for one reason or another, has not with only partial success. One of the most serious troubles is that, in his rage and disappointment, the hold-up man is apt to run amuck and kill people at random. Such a system, therefore, becomes positively dangerous. Yet, combined with the proper complementary idea it makes a splendid device. I will show you how I found this combination. I beg your pardon for a moment."

"Number nine down, Daniels," Hicks called.

In a flash, our view through the window in front of which we were assembled, into the interior of the banking room, was shut off. There was a hiss and a click, and we were face to face with grey steel.

Scientific Facts

"IT may interest you," commented the inventor, "to know this shutter is made of a new chromenystydenum steel, which, when heat-treated, develops extraordinary properties. The minimum tensile strength is 180,000 lbs., and it shows a Brinell hardness of about 600. In a plate such as this, which has a thickness of an eighth of an inch, no bullet from any pistol will make more than a slight dent."

Respectful silence greeted this announcement. Everybody looked serious. Somebody whispered "tremendous." Croffitt and Kragg gravely wagged their heads. There is nothing better than scientific facts to make people think, I say.

"What is more interesting, right now, however, is that the face of the shutter is formed with a number of slightly concave indentations similar to a magnifying mirror. Such a mirror is used to reflect and concentrate light. The purpose of these concavities also is to reflect and concentrate—not light, but water."

There was a ripple of excitement. The interest was rising. Apparently ignoring this, the inventor went on:

"So we now come to the hydraulic part of my

system. Let us pause for a moment and see what we want to accomplish. We want to catch the criminal, that is true. But first and foremost, we want to defend ourselves against him. In these days of gang banditry, we must be prepared for a condition where one or two of a company of robbers undertake the hold-up, and other members stand ready to start a general attack if things do not go as intended. The tellers' windows, of course, present the only profitable point of attack. The modern bank bandit is a desperate and quick-witted individual. Seeing a comrade foiled by the shutter, other members might, for instance, place an explosive against some of the windows. It has been tried. So they must be warded off—absolutely prevented from even getting near a window.

"Now suppose we had a four-inch stream of water, under a pressure, say, of two hundred pounds per square inch. If we were to direct this stream against this shutter from a distance, of, say three feet, then what would be the effect?"

"The effect would be tremendous. The power of a stream of water like this is something that cannot be imagined until one has seen it. Presently I shall give you a practical and convincing demonstration of what such a stream will do. In the meantime, let us reason out just what will take place. The water will be deflected by the surface of the shutter. As that surface is divided up into a number of concave surfaces having their foci placed at a variety of slightly different angles, the four-inch stream, now divided into two dozen smaller streams, will be thrown back with tremendous force from the shutter, right in the face of the attacker,—a blinding, unescapable, elemental rush of water against which there can be no thought of fight,—in the face of which resistance becomes a mere ridiculous fantasy, and action of any kind, whether concerted or not, a preposterous joke."

Why Smith Got Scared

AS the inventor paused to wipe the perspiration from his face, it was clear that Hicks' logic was hitting the mark. The whole thing had at first seemed odd, but now it turned out to be a wonderful piece of reasoning. Just then Smith nudged me and drew me aside. I looked at him. Worry was sitting on his brow.

"I am going," he said.

"What for?" I asked, astonished.

"What for! Why, because I am afraid of this nut and his stuff. Here he's got water again—and look at the force. Under 200 lbs. pressure per square inch. Why, I don't feel safe near those pipes even. It's a long time since I went to engineering college, but I . . ."

"Why, man, you mean to say you studied to be an engineer?" This from me, for that study fascinated me beyond anything else.

"Yes, I did, and . . ."

"And now you are content to be a chess-monger . . . er, er, . . . I mean, you know . . . I don't mean . . . I meant to say . . . Well, now . . ." I stammered. I wonder will I ever get over that confounded impulsive way of mine of putting things. I didn't think at that moment that Smith always seemed supersensitive about that business of his—got a delicatessen store, you know.

For forty seconds Smith said nothing, but regarded me with a gaze of fierce intensity.

"You were saying," I gently urged. "Yes, you were saying."

Gradually Smith's face relaxed and his glance lost some of its steady fierceness. After a pause that seemed like a month, he ground out slowly:

"Well, as I meant to say when you interrupted me, this stuff doesn't look safe to me. Pressure way too high. Too much trigger business about these electrical controls. Why, that stream of water turned on a man would be enough to throw him fifty feet, O'Keeffe! I am going."

"May be so, but I am staying," I announced. "Maybe it is too high. What of it? We can always get out. We are on the street-level. The room is big. There are doors. You will be missing something, if you go. If I were you, I'd stay. Come on, stay."

Smith did not reply. Whether my argument or fear of being thought afraid changed his mind, I don't know, but he stayed. He was uneasy, though. Meanwhile this conversation had lost me a part of Hicks' speech.

Wonderful Reasoning

VALVE practically hidden in the top of this column, and designed to throw the water at an angle of forty-five degrees to the wall surface, the water being actually deflected, however, in a general horizontal direction and straight out, by reason of the inclination of the convexities in the shutter to which I referred. While the stream as it issues from the nozzle will therefore miss the head of the person standing in front, his face and the entire upper portion of his body will be the target of the rebounding water at a distance of two feet. But even six feet away, though spread out wider, the power of the spray will still be so great that it will be impossible for any human being to hold his ground.

"You may wonder why I first direct the stream against the window. It might seem more practical and surer to direct a number of streams from the window against the intruder. But that would complicate matters instead of simplifying them. Instead of one valve I would need at least a dozen, and they would have to be built in around the window. You can see some of the complications already. And then, while such a system would ward off the bandit, it would still be incomplete protection. A bomb, with the fuse burning, for instance, might still remain on the window sill.

"With the present arrangement, not only are all complications avoided, but the torrent of water, boiling over the window, would immediately sweep away and render ineffective any explosive charge. After all, as you see, the indirect way here proves the best and the simplest way out."

HICKS smiled a little as he noticed how his neat piece of reasoning was being appreciated by his audience. Remarks such as "sure is good," "wonderful fellow," "Isn't he just fine"—this from the women—more or less subdued, were to be heard on every side. "You can bet that I shared in the general appreciation. Only Smith agreed aloof, and looked sullen and worried.

"A general switchboard," resumed the inventor, "back in the tellers' room, and which you can see through these windows in the inner banking room, takes care of all electrical controls. It is now exposed to allow final adjustments to be made, but later it will be covered by a box and locked to prevent untoward happenings. One of the controls on this board is for the operation of the shutter, from the action of which results the opening of the overhead valve. But what I have so far pointed out to you is only the first line of defense. You will remember that we do not merely want to scare the holdup men away, but that we want to apprehend him—we want to utterly confound him, all along the line. And so we come to the piece de resistance of the Hicks Electro-Hydraulic Bank Protector, namely, the Hydraulic-Centrifugal Rotating System. It is here that the punitive features of my invention come in."

With Hicks pointing out things I quickly began to see system in the arrangement of the columns. There were four grouped in front of each teller's window to form a square having sides of about two feet and a half,—all four meeting in graceful gothic curves overhead, where they were topped by a beautiful cluster of lights. Two of the columns were within a few inches from the partition, and, in fact, ran through the counter, the other pair being set out further into the room. In the left hand one of these there was located the four-inch nozzle. And centered between them on the floor, there was a raised circular step, about eighteen inches in diameter upon which anybody would have to stand in talking to the teller. I had paid no particular attention to this before.

Some Technical Data

"THIS round step," Hicks said, "is in reality a revolvable platform. I say revolvable, not revolving, because ordinarily, it is fixed. But as soon as the shutter has dropped, it is free to revolve. You have already seen that one of these columns is really a standpipe. I want to add that the remainder are the same. And as you see here, each one of them has, at a height of from three to five feet, and under the guise of ornamental excrescences, a row of three short nozzles with a two-inch opening. Now, if you'll look closely," continued Hicks, "you will notice that these nozzles are pointed in a direction that would be about tangent to the body of the person standing on the platform. Now what is the idea here?"

"Suppose we were to direct four tangent streams at the round platform on which the person stands," continued the inventor, "what would happen? Why, it would revolve—it would start to spin at a speed of which the rate would be determined by the diameter of the platform, the area of contact, the force of the water streams, and the frictional coefficient between the water and the peripheral surface of the platform."

"Good!" I cried. "Go on." Some of the company turned round and looked at me, but I simply can't help it, I am gone on that stuff. Some day, when I have time, I'll take a course in engineering.

Hicks looked around him, pleased, and continued: "So, when we apply the four triple two-inch streams, each under two hundred pound pressure per square inch, to the body of a person standing on a platform

—mounted, I will add, on roller bearings—and when we consider that the muzzle velocity of the stream is approximately 173 feet per second, and figure the mean diameter of the average person, the fractional area presented by the clothing, and the coefficient of friction of the clothing and water . . .

"Good!" I broke in. "Good! Fine!"

"Why then I find that, after all necessary deductions are made, an average rotational speed of approximately three hundred and forty revolutions per minute should be obtained."

I restrained myself with difficulty from patting Hicks on the back. Inwardly I swore he should have one of those two bottles of Hennessy Five Star I had at home. As for the company, they were humming with remarks. President Croffitt wore a broad, hard smile on his face. The other two presidents were whispering in that impressive way that bankers have.

What Happens to the Robber

"NOW," resumed Hicks, "picture the situation. The hold-up man enters. He steps on the platform—there is no other choice. The teller suddenly looks into the muzzle of a gun. 'Skip me five thou', or you're dead,' is the demand. The teller steps on the button. There is a crash—all the shutters in the room are down. Perhaps the burglar shouts—no matter, the shutter can stand it. And it would be his last vicious act, for within three-tenths of a second after the shutter is down, the twelve valves open simultaneously. The water is under 200 lbs pressure. Escape is impossible—you cannot cross such a stream ten feet away from the nozzle, and here it is only two. At the end of the first second, the robber is spinning around at the rate of one hundred and twenty revolutions per minute. After one hundred revolutions, however, or in time, seventeen seconds, the water is shut off. We don't want to kill him, you know. Dazed, unconscious, he collapses on the floor. Meanwhile the remaining tellers' windows have automatically been closed. The rotating system is here inactive, but tremendous sprays of water from the first line defense are playing into the room. Some of the customers, of course, will get a scare, and all of them will get a wetting, but that is a matter of trivial moment compared to the fact that the attack is foiled and a decisive setback given to future nefarious schemes. As for the robber, he is beyond escaping by his own effort. There is still one possibility—he might be carried out by accomplices. But even this, his last ray of salvation, is annihilated by the final and crowning feature of the Hicks Electro-Hydraulic Bank Protector—the Adhesive Reaction.

"If you will look overhead"—we all did and for the first time I noticed in the ceiling above us, what looked like a semi-spherical metal ornament about two feet in diameter—"you will see, corresponding with the row of tellers' windows, and exactly above each platform, a corresponding row of my patented Adhesive Droppers. Each of these bowl-shaped affairs is made in four sections, which are hinged at the top. When closed, each bowl contains—you will be surprised to hear it—one hundred pounds of the strongest adhesive known,—Le Page's Liquid Glue."

There was no question that this was indeed a surprise. Some one laughed. Banker Croffitt smiled a hard, pleased smile.

"It might look like a humorous touch," said Hicks, also smiling. "But it is, in fact, from the standpoint of the bank, the needed final link of protection, and from the point of view of the gangster, the final link in the chain that will bind his wrists. The glue is contained in an envelope of collodion so thin that it will just suffice to keep it together so long as it is in the bowl of the dropper, but instantly bursts into fragments when the ball is dropped. Now complete the picture: The burglar, unconscious, has collapsed on top of the platform. One of his colleagues undertakes to carry him out. Before he can even raise him, or to be exact, in two and a quarter seconds after the rotating streams have been shut off, the bowl opens and a solid ball of glue, two feet across, and weighing one hundred pounds, drops from a height of twelve feet. The effect, I need hardly say, is final, insofar as escape is concerned. Did you ever, in fastening things together, get a little glue on your fingers and then try to do anything? If you did, then you have some faint idea of what a man can do, or what can be done with him, after one hundred pounds of liquid glue have been dropped all over him."

A Case of Cold Feet

FOR a few moments there was silence, and then there was clapping of hands, led by E. F. Croffitt, himself. Everybody crowded around him and the inventor, congratulating one or both, asking questions, expressing admiration. Only Smith stood aside, with a scowl on his face.

"I am going," he said.

"Why, man, what is bittin you now?"

His wife had overheard us, for she claimed in, "You are going, Billy? What for?"

"Don't like that stuff, I told you. I have a sort of a feeling . . . I am afraid of that high pressure and that fool mechanism. And that centrifugal stuff—remember the Automatic Dining Table. As for those electric controls—think of the Automatic Apartment and what it did to us. You came along."

"But I am enjoying this," Mrs. Smith objected.

"I am going to stay."

"Then stay if you want to, but I am going!"

For a moment I hesitated myself, but I quickly recovered.

"Stay, Smith," I urged. "Come on, be a man. You wouldn't leave Mrs. Smith here alone, anyway, would you? Don't spoil the fun—do me a favor. You aren't really afraid, are you?"

That settled him. He stayed. But he was looking no more cheerful—less so, if anything.

"Now, ladies and gentlemen," Hicks' brisk voice was saying, "we will have a practical demonstration. In the rear of the room and far away from the scene of action, I have had built a platform a foot from the floor from which you may watch proceedings, dry footed, when the water starts to play. It will be confined to the opposite end of the room. I have had prepared a dummy"—here he patted the shoulder of a life-size doll, intended to represent a muffled hold-up man—"which we will put through its paces when it comes to turning the water on. But first we will need some dry action. Mr. Krugg has volunteered to play the sinister burglar, and Mr. Schmaltz will take his place at the window and represent what he is in real life—a teller."

Schmalz, a small, round man, was immediately installed behind the teller's window. Mr. Kragg, to the general amusement, was tying a handkerchief across his face.

"All ready, Daniels!" cried Hicks. There was no answer. "Must have gone out for a moment," said the inventor. "Try your button, Mr. Schmalz, and see if the shutter is acting. It's all safe—the water is shut off!"

A Practical Demonstration of Hydraulics

I COULD see Schmalz moving slightly sideways as he fumbled for the button with his foot. There was a little jerk and the shutter moved, as if it were trying, but it did not come down. And then with a him, with the suddenness and force of an explosion, a mighty stream of water issued from the overhead nozzle and struck the counter just in front of Schmalz. It was all so quick that I noticed Schmalz was still smiling when the deflected stream, now flattened, hit him right under the chin. Even in that tiny fraction of a second the thought shot across my brain that Hicks had said he would give a convincing demonstration of the inconceivable power of such a stream of water,—and here it was. The next moment the rebounding stream had lifted the unfortunate teller in the air. A doubled-up ball of humanity, he was turning a rearward somersault over a table right behind him. One, two, three, four turns, executed with fantastic rapidity; the bounding stream of water playing on the periphery of the human ball that was Schmalz and accelerating his rotation. And then abruptly, he landed, sitting down, but with a sliding motion, on the switchboard. The last thing I remember seeing were miscellaneous pieces of the bottom of his pants adhering to various levers and other protuberances on the switchboard. What became of him from that moment on I do not remember, for I was busy elsewhere.

Even before any of the women had time to give vent to a shriek, the inventor's despairing yell resounded through the room, piercing the crash of the tumbling body and the roar of the water:

"The switchboard—God help us—must get at it—doors locked!" And with incredible speed he made for the nearest window—the shutters had all remained open and the whole thing was evidently out of gear, for nothing was happening the way it should. Even as I wondered at Hicks' presence of mind, I noticed that Smith was also about to climb through another window, and I distinctly recall in that moment regretting that I had ever thought him a coward, for here he was one of the only two men of action in the crowd—the others were paralyzed. I was too.

The Hydraulic Rotating System in Action

ALL this happened in a fraction of a second. As I have observed before, in emergencies the human mind works with lightning speed. As Hicks was lifting one knee to get into the window, I heard a distinct loud "click," and at the same moment I saw ten thousand stars and found myself sitting twelve feet away on the floor, yet on something remarkably soft. I distinctly recall noticing this detail. And then I noticed that I was getting

hit at rapid intervals and that I was wet, and getting wetter. I had hardly had time to associate these various facts with the tangential streams from Hicks' window, when my dazed senses were stung into wide-awakeness by the spectacle which now presented itself to my one good eye. Of Hicks nothing was to be seen, but there was a tall column of water which was whirling around with incredible rapidity, and from which at frequent irregular intervals there issued offshoots in the form of mighty spurts of water in four directions. Simultaneously, a roar as of a high-power turbine, punctuated by staccato splashes as the branching streams hit something or somebody, was to be heard. The room all over was one mass of horizontal geyzers and everybody present was floored, some of the company lying in heaps over each other and crawling about in their misery from one place to another, only to get into worse trouble.

I only noticed these things by the way, for my horrified gaze was riveted on the upright whirling maelstrom, which I knew contained Hicks. And then suddenly, I remembered that Smith behind me had tried to get through a window too, and turning half around on where I sat—I was quite unconscious that I was sitting on Mrs. Kragg, and as I afterwards realized, was merely feeling an undercurrent of irritation at the shrills of agony proceeding from underneath—I saw another whirling waterspout a few feet away, with a dark core which I knew to be Smith. "Poor, heroic fellow," I remember saying to myself, and then one of the tangential streams branched off and hit me on the ear so hard that I was knocked off my perch. "And I was the one that urged him to stay!" I thought as I turned over and rolled off. A little shiver ran down my spine—it was not due to the water. I say there is nothing like the human mind—strangest thing in all the world.

WHAT I have related so far took place probably in no more than four seconds. The surprise attack had been so sudden and so fierce that only a few screams, for the most part quickly muffled by fierce darts of water, had been heard. But long before the two unfortunates ceased their involuntary mad-dervish whirl, shrieks, curses, maledictions, advice to get out, orders to do this or that, demands to stop it, filled the air. Somebody had crawled to the door and tried it. I knew it was no use—Hicks had said it was locked—it had been his last remark. Logical too—part of the scheme. I knew we were caught, even as I was ineffectually trying to dodge the fierce intermittent shots of water that were assailing me from two sides. It had just dawned on me that I might slightly better my situation by crawling elsewhere, when I suddenly noted that the streams had ceased. Instantly the thought flashed through my brain that a hundred revolutions had been completed—part of Hicks' system was working, anyway. My head was turned in the inventor's direction, and even as I was looking, the envelope of water suddenly dropped from him, and Hicks, no longer sustained by the tremendous gyratory force of the vortex, collapsed between the four columns, a wet, deformed mass.

I heard a piercing scream behind me and turned round. Mrs. Smith was draping her wet but opulent form over the prostrate body of her husband, who was dazedly trying to raise his head.

"Oh, my poor, curly-headed baby!" Mrs. Smith was saying, in a pitiable tone, as she put her arm tenderly around her husband's neck. It's funny how I am built, but even half-dressed though I was, I knew that that appellation was not altogether correct, for Smith is bald, forty years old, and weighs over two hundred pounds. This didn't seem to matter to Mrs. Smith, though.

The Power of Glue

"OH, my poor, little curly-headed boy!" she was saying for the second time. "My . . ." She got no further. There was a rush as of something soft and heavy. A dark, shadowy form swept by, there was a dull, heavy "tap!" and Mrs. Smith seemed to crumple upon her husband, while her head and shoulders were blotted out by a greenish mass about two feet in diameter.

It was one of the Adhesive Reactions—I knew it instantly.

"Help! I . . . gob . . . gob . . . gob . . ." I turned to see whence the new cry of alarm issued and saw Hicks, who had managed to sit upright, looking like a humorous sketch of a deep-sea diver. His head appeared six times its natural size, enveloped as it was in a hundred-pound gob of liquid adhesive. In that moment I knew what he had meant when he talked of the psychological effect of the thing—it was awful. And yet I knew only the beginning.

E. F. Croffitt sprang to the aid of Mrs. Smith. All bankers are chivalrous. He could not make her hear, for the adhesive had enveloped her entire head in a coat an inch thick and was slowly spreading in heavy greenish streams down over her body or dripping off, here and there, in big drops,—but he sought her hands with his and succeeded in raising her. Just then Mrs. Smith blew an opening through the coat of glue over her mouth. A blood-curdling shriek rent the air, as she fell around Croffitt's neck. The banker tried to get away, but there was no getting away. Instead the lady drew him closer and closer to her bosom, blindly seeking protection, where she knew there was human flesh. It was in vain that Croffitt exerted his utmost strength to escape the viscous embrace. His struggles only got him mixed up more, and it was not long before he was encased with glue from head to foot. The adhesive by this time had worked down on both their garments and was all over their shoes. The two, Mrs. Smith holding the banker in a tight embrace, were executing a strange two-step on the mosaic. Their shoes got stuck on the floor by the heavy, sticky mass that was running off them, and this made their efforts increasingly more frantic. Under Croffitt's superhuman struggles to wrench his feet free, first one Oxford, and then the other, followed by both his socks, remained adhering to the floor. As they stumbled about in their weird and sticky dance, they backed into the inventor, who had made a breaching hole in his glue mask by swallowing a quart or so and, in trying to claw some of the stuff off his head and neck, had enveloped his hands in sticky globs eight inches in diameter. Under the impact, he now put these out blindly and closed them from behind over the banker's face. Croffitt's roar of rage at this new injury shook the ceiling, but was almost instantly

stifled, as a big gob got lodged in his mouth. He swallowed hard—down it went.

Schultz Does His Bit

WHILE I was watching this new development with a sort of nightmare interest, I realized subconsciously that all this time the thundering of water had not ceased. I turned my head towards the partition and instantly I knew the reason. It was only the tangential streams that would cease at the end of seventeen seconds—the four-inch line of defense was going full force, but as the shutters had refused to act, they were blasting away through the windows into the interior banking room. What had become of Schultz? The question struck me with a sickening mental thud. Had he been killed? Was he drowned? I raised myself and looked crosswise through one of the windows. Fifteen enormous streams were playing against the opposite wall, from which they were rebounding with a frightful roar. A subdued, powerful hum, I noticed now, was shaking the room—the noise caused by the tremendously fast travel of the water through the pipes. But where was Schultz? There, in the midst of a boiling water volcano rising from the opposite wall, up to his waist in water, he was,—I saw a head and arms. He was alive! He was doing something, too—fumbling with the switchboard. Good! Fine! I almost cried to know that he had not been killed.

And just then another thought struck me with annihilating force. The switchboard! Let him fiddle with it and only the Almighty knew what would happen next!

"Shut up! Get out! Leave it alone!" I screamed. He did not hear. The noise was too much. But I shouted again. I gesticulated. He did not see. I turned round in despair. Kragg was standing near me.

"Get to get him to leave that switchboard alone," I yelled,—"he'll raise the devil if he don't."

Kragg proved a man of action. "Let's both yell at him—he may hear that!"—he roared at me, as he went as near the window to me as the oblique stream from above would let him. "Now!"

I LET out my yell—but got only half through it. Beneath the roar of waters, I heard a sharp click. There was a black flash, and I would instantly have known that the shutter was down, even if the tremendous spray of the freezing water which barely missed me, had not apprised me of the fact. The realization that I had escaped came simultaneously with the knowledge that Kragg had not. He must have had his head right in line with the rebounding spray. There was an explosion of water as the boundless hydraulic force made contact with his face. This lasted but the hundredth part of a second, however. Then Kragg, head backwards, with inconceivable speed and the force of a battering ram, was shot out into the room. With a sickening thud, his head bored itself into Irvine's stomach—he had been standing right in line. Irvine shut up like a jack-knife, and the combined bulk of the two men landed on Quigley. The sigh of the escaping air from the little banker as the three hundred and fifty pounds abruptly sat on his stomach, could be heard even through the thundering and hissing of the water.

Elsewhere in the room, the water was raising indescribable havoc. After the first baptism had ended, most of the people had instinctively backed against the wall opposite the partition, in their desire to get as far away as possible from the source of those tangential torrents. They now, however, found themselves in the very worst place, for by the time the four-inch streams had gone nearly across the room they had spread enough so that the entire exposure of the opposite wall was, to use a paradoxical expression, under fire—the remainder of the room being under water anyway—which was now two feet deep. Under the relentless play of those mighty fountains nobody was able to keep his ground. Some, on their hands and knees, were crawling out toward the partition again, others were crouched with their faces against the wall. Hats, sticks, and gloves, ladies' handbags and other articles were floating around in the boiling sea. I was one of the few who had remained near the partition and was therefore comparatively comfortable, for I was merely sitting in water up to my chest. I was still, in a dazed and detached way, admiring the strange effects produced by the mighty spray playing upon the Krugg-Irvine-Quague trio and wondering about their seeming inability to get disentangled from each other, when abruptly the streams ceased flowing and the roar of the waters ended. The stillness which followed, by comparison, seemed like the stillness of death.

The Field of Battle

HERE and there, half-crazed human beings, women with their dresses sticking to them, men with wetted collars and clothes from which the water was running in rivers, were raising themselves from the deluge. The fierce force of the water discharge was replaced by a tune in a new key. Women wept and sobbed. Men cursed, as yet weakly, but as if they meant it. As reason began to return, anxious glances were focused in the direction of Hicks. So far as he was concerned, the water display had been a benefit, as it had to Mrs. Smith and Croffitt, by washing some of the glue off them. Smith himself was propped up against the wall. His face was pale, but his glance was ferocious, and it was bent upon me. I regretted to see how quickly he was recovering. Mrs. Smith's face was clean, but her hair was a solid mass of adhesive. Croffitt had risen. He had a thick wad over his neck and ears, and his entire front elevation was still bearded with the stuff. As he stood there in this array, minus shoes and stockings, I decided he did not make a very impressive figure. But his glance at Hicks was absolutely frightful! The water was rapidly draining off—that part of the system was working, anyway. With my mind still in a reel, I dully, vaguely wondered what would happen when those people really woke up. And then the thought flashed through my mind that after all, we—this company—were the best proof of the efficiency of the Hicks Protective System. How could robbers hold up a bank such as this?

A Little Surprize

THERE was a pounding at the door. "Help is coming!" cried Mrs. Krugg, jubilantly. "We are rescued!"—A fool remark—what in the devil did we need rescuing for, anyway. All

we had to do was to walk out. I might even slip out—ahead of Smith. I felt better.

The door opened. Four men entered. They closed it behind them. I was surprised to note how carefully they closed it.

The four men advanced. At first blush, these rascals did not look inspiring. Two were little skinny, ferrety-looking individuals with hard, shifty eyes and harder mouths. The third was a brutal-looking, heavy-set young man who chewed a quid, and the last man who entered, a lank, hunch-backed individual, had a positively evil look.

"Hold up yer heads an' line up agin de wall, if yer don't wanna be killed," ordered the lank individual. And he jerked out a big pistol, which he waved in our general direction. "Now don't make no noise. Shoot de fust guy wet makes a wrong move, Butch," he said casually to the heavy-set man.

"Sure will, Jake," replied that worthy.

"Now go t'rough den clothes, yer two," ordered the leader, for none less was the lank man. At this, the two ferrety-looking yeggs started a business-like survey of our clothing. They worked fast, yet took time to be thorough, and it was surprising to see how much they collected. Watches, rings, bracelets, jewelry worth thousands of dollars, were straggled from us in a few moments, and this was joined by an equally large sum in cash.

"Now, ok Baldy," the leader disrespectfully addressed E. F. Croffitt, "show us de way to yer strong room an' open it fer us. Dere's a good guy—yer don't wanna have de santon t'row de dust on yer nose in a couple days, does yer, now?"

"Why, I have no vault here . . . at least, the money isn't in it. It's in the other part of the bank," stammered Croffitt.

"Quencher lyin', yer big stuff," snarled the leader, "an' show us de cam."

"I . . . I . . . I assure you," said Croffitt.

"Lemme put a knife aween 'is ribs, jes' lemme," chimed in Butch. "Ta' jes' a-schin' ter do it, Jake, an' it ain't gonna make no noise."

"Get busy sudden or yer's dead," snapped Jake, and shoved the muzzle of the big pistol right under Croffitt's nose. The banker's face grew ashen. "I will," he whispered.

While the two rat-faced men held the rest of us at bay with drawn revolvers, Jake and Butch entered the inner room. I could see, from the point where I was standing, how with trembling hands, E. F. worked the combination. He stepped back, and Butch by him, pistol pressed to his side. The leader went in and presently came out with several bundles of bank notes. Evidently he was an expert who did not care to encumber himself with heavy stuff. E. F. Croffitt groaned. "Don't take it—there's a hundred thousand dollars. Please don't—I am a ruined man," he moaned.

"Course we ain't gonna take it, Baldy," observed the facetious Butch. "Jes' gonna look it over an' see if it's all dere and den give it back to yer. Jes' bank examiners, dat's all we is; ain't we, Jake?"

"Sure," that worthy responded. "Jes' a-takin' care o' de interests o' de de-positioners, dat's wot we is."

When Croffitt had been conducted back among us, the four hold-up men backed away a few steps and the leader addressed us.

"We been a-watchin' yer h'l game fer a while."

said Jake. "Kinda kep' me eye on de joint. Le's see how dis 'ere bank protective stuff works. I says ter me I'll playmate here. An' it sure worked. Ain't youse de guy wot invented it?" he suddenly asked, turning to Hicks. The inventor, pale, slowly nodded.

"Say, buddy, I likes yer," Jake said, impulsively. "Yer done us a good toin. I likes yer, an' here is four bits what says I does," and diving in his pocket, he fetched out a half-dollar and pressed it into Hicks' hand.

"Now, Garmy, do yer stuff! We gotta be a-goin'," he commanded. At this word, one of the red-faced men drew out a small parcel, which he deftly lighted and threw in the air. Almost at once the room was filled with dense black smoke.

"Stay dere, an' don't raise hell or yer'll all suffer," was the parting command, as the four crooks went out through the door. We heard them lock it from the outside, and then the cry "Fire! Bank's afire! Ring de alarm!" which was immediately taken up by other voices outside.

The Morristown fire department is celebrated for its efficiency. It seemed that we had hardly had time to stumble about in the dense smoke to try the door and find it really was locked, before we heard the

clanging of the bells and the shriek of the sirens. In a jiffy, in less time than it takes to tell, plate-glass windows were smashed in, and six tremendous streams of water played into the room, searching every corner. In vain were our shrieks, yells, curses. There was smoke, and where there is smoke, there must be fire. That was enough. The Morristown fire department know their duty. It was only after our company had been floored for the time, after we had been utterly confounded and beaten down, and were crawling around in two feet of water in a condition of absolute and abject misery, that a fireman climbed through to investigate.

I was not present to hear what was said. Neither was Smith. Neither was Hicks. For we were going down the street. Smith was running like a long distance champion. But over my shoulder I saw he was hopelessly outdistanced—I was ahead of him, you know. And I looked back a number of times to reassure myself, for Hicks, who was ahead of me, was going so fast that I seemed to be running backwards. And I wasn't trying to catch him at that—maybe Smith was. I reached my apartment and locked myself in—and next day I left for the West. I needed a vacation.

THE END

The Author's Explanation of "The Astounding Discoveries of Dr. Mentiroso"

THERE are several "catches" in the story of "The Astounding Discoveries of Doctor Mentiroso" and therein lies the solution. If Doctor Mentiroso traveled from west to east at 1,000 miles per hour and was free from all frictional resistance and the attraction of gravitation he would remain approximately over the same spot upon the earth indefinitely as the earth would be traveling at the same speed through space; and without the resistance of the atmosphere or gravitational pull he would be left



IF TRAVELING EAST TO WEST AT 1000 MPH



IF TRAVELING EAST TO WEST AT 2000 MPH

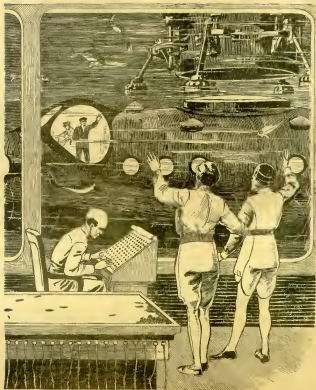
far behind unless he were traveling eastward at 1,000 miles per hour. If he reversed his direction and headed west at 1,000 miles per hour (being of course free from gravitational pull and atmospheric resistance) he would be passing the surface of the earth at 2,000 miles per hour although still traveling about the earth's axis at 1,000 miles per hour. Hence he would make a complete circuit (although in an opposite direction) every 24 hours, so that the sun (to him) would rise in the west and set in the east and his days would be 24 hours long. He would arrive back at his starting point 24 hours later, with his time agreeing with the earth's time at that point. If he traveled at a speed of say 24,000 miles per hour it would not affect the earth's time, but would merely result in each of his days being one hour long, or in other words, the sun to him would rise and set every hour. As all our time is based upon the earth's rotation and orbit, Doctor Mentiroso's time (if traveling faster than the earth and free from its atmospheric envelope) would have no real connection with

earth time. It would in fact be similar to time upon a distant planet. Theoretically, he would of course, return to his starting point before he left it, provided he went by earth time; but just as soon as he begins traveling about the earth's axis faster than the earth itself, he produces his own individual time. In other words, if his days were one hour long (when traveling at 24,000 miles per hour) according to our conception of an hour which is one twenty-fourth of the period between sunrise and sunset, then his hours would be one twenty-fourth of an earth hour and his speed based on that would be only 1,000 miles per his hour. The whole question is one of relativity, and regardless of what speed he attained, his time in relation to earth time would remain constant, and the instant he set foot on earth he would find that the time was precisely what it would have been had he traveled about the earth's axis at 1,000 miles per hour.

The accompanying diagram will perhaps make this clearer.

THE UNDERSEA EXPRESS

By J. Roaman.



... As I gazed out into the green liquid on the far side of the glass, I was conscious that my friend had touched the operator in the watch-board. Then, as I looked, the glass came center and with a sudden pulsing of my heart I knew that my ship had come at last. The giant ship-shaped vessel slowly moved her way, and as the forward portion of her length slipped by it was the captain of the bridge, which resembled a small boy's window, waving a hand to Mr. Deerington.

2500 A. D.



FOR years I had planned a voyage to London in one of the big L. E. C. submarines, yet never until this day had I been able to adjust my business and other affairs so as to arrange the trip. There were complications in this, however, for the patents of the International Express Company had lately expired, making it possible for me to see the newer developments which had placed the Company's vessels so far ahead of the many other submarine ships that unloaded their cargoes from the water-filled labyrinth beneath the city streets. Mr. Babbington, Vice President of the Company, had been kindness personified. He had arranged for me to see everything. Yet, as we waited for a sight of the scheduled ship, each succeeding minute served to increase my impatience.

Half an hour of this and I was decidedly ill-humored. I glared about the little subterranean room, noticing for the tenth time the small elevator which nestled in the corner ready to lift us to the level of old Broadway 300 feet overhead. I stared balefully at the pale little man who sat before a small switchboard fingering a row of push-buttons. I felt like clenching his throat, not because he was the cause of the submarine's lateness, but because I was angry and he was serene and miserable-looking. My eyes wandered to the channel side of the chamber, an immense wall of thick, tough transparent glass, the size of a show-window, whose protecting bars of steel reminded me of the prisons used in the days of our forefathers. Then, as I gazed out into the green liquid on the far side of the glass, I was conscious that my friend, Mr. Babbington, had touched the operator at the switchboard. For a moment I thought the latter had turned on another big lamp, which was filling the channel with light, but as I looked, the glare came nearer, and with a sudden purring of my heart, I knew that my ship had come at last.

The giant cigar-shaped vessel nosed her way along and as the forward portion of her length slipped by, I saw the captain at the bridge, which resembled a small bay-window. He waved a hand to Mr. Babbington, whom I heard muttering about Fate and Fortune and the monetary value of the forty-five minutes which the submarine had lost. Then, just as I read the large white letters upon her hull, signifying that she was the International Express Company Ship Number 352 of New York City, she came to a stop with a gentle tremor against the bumper side-chips.

A second later the pale operator pushed one of his buttons and as my eyes followed the direction of his, I saw a huge vertical cylinder cleaving the water in its descent upon the waiting submarine. . . . There was a mild clank of steel on steel and then, as another button felt the serene finger of the operator, six metal arms swung out from the cylinder, lock-

ing themselves firmly to as many thistle-keys. Simultaneously, a current of bubbling water began to stream from a series of electro-heated ports extending around the base of the big tube. This, however, ceased in a few seconds, whereupon a light flashed on above the switchboard.

"Come on," cried Mr. Babbington. "That's the signal—the water is ejected from the cylinder. The 352 will open her hatches and loading will begin."

I followed him into the elevator which whirled us up 265 feet to the loading room where the clang and din of New York's busy streets were wafted down through the ventilators. These noises were as echoes of the sounds which should have issued from this room of arriving crates and departing boxes. But from the room itself there were no loud noises, no clashing of heavy articles, no shouting, no rattling of tracks. I noticed piles of packages and crates deposited gently on the floor by compressed air chutes leading from the checking room on the street level. Each pile was labeled according to its destination—Seattle, San Francisco, London, Paris, Singapore, Peking, etc. The shipments for Chicago and Seattle were at the moment being gathered up by powerful little gas-reciprocating cranes and damped on large lift platforms which carried them up through the ceiling. Mr. Babbington nodded toward the ascending boxes. "To the Air Liners," he said. "Elevators go to landing towers on the roof."

WE arrived at the tubular shafts leading to the channel in time to see my baggage disappear into the depths. Two elevators were unloading while a third sent down a stream of various sized bales. Soon one lift was switched to loading work and shortly after all three were carrying down their cargaments destined for points in the British Isles.

As the loading work neared completion, the passenger left brought up a ruddy, white-haired man dressed in the uniform of a ship captain.

"I'm sorry, Mr. Babbington," he said advancing toward us, "But I can make up the forty-five minutes if I can get up on the surface somewhere on the other side of this storm."

"That's all right, Judson," replied the Vice President with more good humor than he felt. "But what happened to you? My locator dial showed you off Sandy Hook not two hours ago."

"Didn't you get my message?"

"No, I have been showing our plant to my friend

here." And turning to me, "This is Captain Judson, skipper of the 352 who will take care of you aboard ship."

Judson shook my hand heartily and continued.

"There is quite a blow out there," he went on. "Some surface ship dragged her anchor and pulled up one of those old, old cables—a relic of the days of wire communication. Well, it fouled my propeller and I had to stop long enough for my divers to repair the damage."

"I trust you have better luck this trip," replied

If these days of trans-Atlantic flights, one would think that the idea of an undersea express would be rather far-fetched. But this need not necessarily be so, for the simple reason that when trans-Atlantic flying becomes commonplace, as it will during the next few years, much traffic, due to the high cost, will most likely be for passengers. The heavy freight will continue to travel by ocean liners, or perhaps by the undersea express, for better speed, as no steamer will impede the progress of a submersible vessel. There are other advantages, too.

Our ship author, being a Lieutenant in the U. S. Army, takes us into the not-too-distant future, and somewhere you gain the impression that it is all very real, and that you may live to see it.

Mr. Babington in serious tones. "You have a commitment aboard which must reach the London office of Littleton & Roberts by 5:00 P. M. tomorrow; otherwise we lose the \$50,000 guarantee we put up."

"Don't worry, we shall reach London on time," said the captain.

A hurrying official brought Captain Judson his clearance papers before Mr. Babington could put in another word, and we all walked to the passenger elevator. A handshake, a wave of adieu, and two of us were speeding downward through the steel tube.

I stepped out into a well-lighted passage-way as Captain Judson, following me, pressed a signal button on the door of the elevator. This consequence, passengerless, rose from our midst and disappeared up the shaft. Some unseen mechanism caused the heavy rods and guides to slide noiselessly against the wall and the great hatch slowly swung upwards on its hinges to close the aperture above it. Before I followed my conductor toward the bow, I heard the grating and clank of metal above the closed hatch as the cylinder was released from its throttle-keys.

"Captain," I said with some awe, "suppose that through an error, one of those telescopic cylinders should be withdrawn before you close the hatch? We should be drowned like rats."

"Couldn't," he retorted shortly, "throttle-keys won't unlock until hatch has clicked shut."

We emerged into a chamber which the captain identified as the bridge. Opposite us I could see the channel lights through the long narrow arc of glass extending from beam to beam. A seaman stood at the wheel surrounded by numerous dials and indicators. Captain Judson joined him and, when a green light flashed on above the binocular, moved forward the throttle.

I looked out and saw the dimy walls of the channel slip by under the intense brilliance of our headlights. At intervals, traffic lamps came into view and shadows flitted across our bows as we approached and passed under them. Twice I saw submarines being loaded from cylinders similar to that through which I had descended.

In the distance appeared a red light blinking rapidly. I noticed our skipper's hand retard the throttle and felt the thrumming of the ship decrease to a bare perceptibility. We came to a complete stop beneath the red glow and, as I strained my eyes at the window, a tremendous submarine vessel lumbered athwart our bow.

"United Tobacco Freighter," mumbled Judson. "Biggest submarines built—800 footers, but very slow."

The light suspended above us turned green and the 332 forged ahead. We emerged into a small lake where the helm was put over hard so that the beam of our headlight shone into another channel leading to the open sea.

FIFTEEN minutes had passed when a young man walked in.

"This is Mr. Larkin, my First Officer," grumbled the captain, by way of introduction.

We bowed and grinned at each other as our commander continued.

"Those two lights we just passed mark the entrance to the channel," he said, addressing me. "See that green light off our port bow? That is the Rockaway Guide Light. Over there is the Manhattan

Beach Guide,—yes, that flashing one. In a few minutes you will see the Sandy Hook Light off our starboard side."

I remembered having read about the better light—the most powerful in use. It was invented by Gaunttave, who, after spending his life in research, offered the results of his labor to the government. But although the strongest underwater light then known could not be seen from a distance of eight miles, this wonderful lamp was rejected. Gaunttave died a soured and disappointed man, but his discoveries and inventions, as united in his lamp, lived after him to light the submerged shores of the principal ports of the world.

Larkin interrupted my thoughts by stepping up to take his turn on the bridge, but Captain Judson shook his head.

"I'll stick it out until we get well away from these lights and buoys," he said. "You take our friend through the ship."

Larkin smilingly led me down the corridor.

"The Old Man is obsessed with the idea that all those lights are confusing to the rest of us," murmured the first officer good humoredly. "The truth is that he is prejudiced against them. He prates for hours at a time of the days when submarine navigation was done with no other aids than head-light and compass."

We went down a short companionway to the engine room where the powerful machinery was driving us along at ninety knots an hour. Just inside the door and extending across the breadth of the room, were batteries of immense vacuum tubes whose cathode rays gave off characteristic gleams of phosphorescence.

"Each one capable of 500 H. P.," remarked Larkin, simply, during his explanations.

But to me the real marvel was the gas, which, under the magic of cathode rays, possessed unfathomable properties of expansion. The great difficulty in its use was to employ all its tremendous power, that is, to control the expansion. Larkin told me that the man who could do this would receive a fortune even greater than that of Carpenter, the discoverer of the gas.

I WATCHED the great whirling turbines and wondered if man-made machinery could ever withstand the full power of the expansion. I heard the whistling gas leap from the triple expansion chambers and, still under the action of cathode rays, dash against the vanes of the turbines only to scream its way out on the far side and die a natural death in the refrigerating system.

We began the inspection of the ventilating plant where pure oxygen, manufactured from edge water, was diffused through every inch of our ship's four hundred and twenty feet of length. I was about to press Larkin for details when an alarm bell on the wall began ringing furiously.

"Every man to his post!" he shouted. "Come on to the bridge and we'll find out what's up."

We rushed in to find Captain Judson bending over the collision guide. "We're going to be delayed!" he growled. "Have to go to the assistance of a tramp. The lubber was too near the surface and scraped the bottom of an iceberg. Well, we'll see what can be done. Larkin, take a turn about the ship and see that everyone is standing by. You may then remain at the P. E. while I keep the bridge."

As the mate departed, I glanced at the depth indicator. The arrow was fairly flying, 450, 460, 470, 480 a read. The pointer on the collision guide now extended straight toward our bow.

A nervous voice shouted from the communications horn, "Ahoj, *332*, do you hear me?"

Judson growled assent through his communications mouthpiece.

"Well, for God's sake, hurry! My power plant is dead now and I can't get any more pressure in my safety tanks. We'll be cracked like an egg shell if you don't reach us soon. We're at 600 feet now and still going down."

"I'll be alongside in five minutes," returned Judson through his mouthpiece. "How much water are you taking in?"

"I don't know. I think I'm full amidships," was the response. "My engineer had to run for it just now. He says the water is seeping in fast."

For a short while there was silence broken only by the singing of my ears subjected for the first time to the increasing air pressure of the compensating tanks.

Captain Judson suddenly spoke into the communicator. "Ahoj, *Bristol*," he cried. "Can you muster enough pressure around your intake pipe valves to receive a pump line from us?"

"Lord, no!" came the reply. "There's no chance of your pumping. My pressure wouldn't stay up for ten minutes."

Judson ground his teeth. "Well, what do you expect me to do, sink with you?" He paused momentarily, and then, "You've turned down everything I've suggested. Now this is my last word. I'm not going to attempt the saving of that tub of yours. She is completely gone anyway. You've no power and but little air and you're filling fast. I'll take off your crew and that's all."

He ceased, with an angry snort, and cut off our power. The friction of the sea showed us down almost immediately and as we eased along, I caught sight of a long finger of metal shining in the beam of our headlight.

It was the *Bristol*. She was settling by the stern, her bow at an angle of thirty degrees vainly pointing toward the surface, which her tireless crew had fought so hard to gain. She was going faster now and only a few moments remained before she would fall into that sickening dive from which there is no recovery.

But our skipper brought us alongside with consummate skill. As I looked out on the port side it seemed that I could almost touch the great black hull which descended nearer and nearer to our level. Judson, too, posed at the disabled submersible, his hand on the depth valve key which he turned with a slow, continuous motion, keeping pace with the sinking shell beside us.

Then he nodded at Larkin in the doorway. I dashed out to the passenger's emergency port, called the P. E. aboard ship, arriving just in time to see two of the crew enter the heli chamber. Before the heavy hatch closed behind them I caught a glimpse of their gigantic copper extreme-pressure suits. Then as the steel cut them off from my vision, the outer hatch was opened and the sea entered the chamber with a noise like thunder.

I held my breath while the dauntless two sought the stanchions of the *Bristol's* emergency hatch.

The *332* was worked forward ever so little, but always sinking, sinking.

ABRUPTLY Captain Judson's voice yelled into the communicator, "We've got you, we've got you! Quick! Get your men aboard."

There was a faint answering roar of crashing water, then the whistle of compressed air in our own chamber. In a moment the inner hatch opened and a dozen men staggered into view.

I turned again to the bridge with the intention of congratulating Captain Judson for his fine work, but that old sailor was doubled up over his depth valve key.

"They've got no more pressure," he muttered half to himself. "The skipper is alone—had to work the valves for the others. He's going to open his hatch and try to drag himself against that deluge—"

Suddenly there was a gurgling smash. We looked up quickly as the elevated bow of the *Bristol* came down opposite our windows. The sight seemed to freeze Judson to immobility, one hand on the depth valve key, the other on the throttle. While he watched during that breathless moment, the *Bristol* hovered on an even keel and then with a quick lurch, her bow settled and the long, black hull plunged downward. At the same moment a claxon sounded discordantly and I was knocked to the floor by the instantaneous jump of our ship as Judson opened wide the throttle. But we were safe from the dangerous section and we had saved our man—snatched him from the jaws of death.

The nervous tension over, Captain Judson swore softly at the loss of our lead gangplank which had been torn from its runners by our sudden forward lurch for freedom. Except for this slight outbreak, however, everyone went about his work quietly and as Larkin took the bridge and began the long, gradual ascent to our cruising depth, I turned to seek my stateroom.

I must have slept heavily, for when my first meal was finished, I saw the moon shaft walking aft toward the engine room. I hurriedly walked in the opposite direction, mentally formulating an excuse for my lateness; but when I reached the bridge, there was not a soul in sight. To say I was puzzled would hardly describe my sensation, but as I pondered this peculiar situation, the truth dawned upon me—we were on the surface. That continuous sheet of water beating against the glass was our bow spray; that bright light was the glorious sun.

I raced for the companionway leading to the after deck and stumbled up the steps. Larkin, at the surface gear, looked through his goggles at my puzzled expression.

"Had to come up to make up our lost time," he explained. "We're making 130 knots now."

Indeed, every appearance supported the truth of the latter assertion. Although the sea was smooth and the swell was hardly discernible, the whole forward portion of our deck was awash in the stream of foam displaced by our piercing bows. The wind, whistling through the surface gear, burned into my eyes and tugged at my clothing. Yea, we were indeed speeding and I wondered if our artificial wind was much less than that created by the great airship which passed over us just then, some 6000 feet in the clouds.

My reflections were cut short, however, by the

(Continued on page 877)

CRYSTALS OF GROWTH

By Charles H. Rector



then a shadow passed over his face and before my eyes he commenced to increase in size . . . here before my eyes, growth was taking place immediately. It was almost unbelievable . . . He towered over me like a giant. His growl so told that his head reached the ceiling. "Try me yourself, Johnson," he said, "and measure your lot."



THE strange and extraordinary events connected with our lives have always been of exceptional interest to me and even as a boy I was never more content than when I was reading some good ghost story or examining some so-called "haunted house." As I became older, this liking for mysterious things developed into a study and investigation of matters dealing with the psychic and occult. I have visited many spiritualistic stances and have given reports concerning them to the public, through recent letters.

However, I am not a fanatic on any of these subjects, and devote only a small portion of my time to these pursuits, for a well established law practice engages me the major part of the time.

Among the events which have happened during my studies of psychic science, there is one which to me is most vivid, something which has left a very marked impression upon my mind. I refer to Professor Brontley and his theory of rapid growth. Early last spring I became acquainted with the prominent teacher and writer, James H. Brontley, whose remarkable achievements in the field of biological chemistry have won for him a wide-spread and well deserved prominence. Professor Brontley and I became fast friends and I considered myself fortunate to have the opportunity of knowing him so well. We would often sit for hours and converse upon subjects of common interest.

One evening I sat in my chair musing before the comfortable fire; I had just finished my dinner and was resting quietly thinking of the latest accomplishments of my friend Brontley. He had confided to me a short time previously that he was experimenting upon a subject which, if successfully attained, would secure not only personal fame for him, but would be a wonderful benefit to mankind. He had told me nothing of the nature of the experiment and I was thinking of this particular thing, wondering when he would have something definite to say to me about it, when the door was suddenly opened and the very person about whom I had been thinking came into the room and dropped down in a chair near me. He looked exultant and excited and as he shook my hand he burst out:

"Jameston, I've found it at last and I have come to tell you about it."

I looked at him in surprise. What did he mean? I grasped him by the arm and asked, "Do you mean that your latest experiment has been successful? You mean the experiment that you have been working on for the last six months?"

"That's the one. It's the greatest success of my life and I want you to know about it first. Listen," he said as he shoved his chair closer to mine, "and I will tell you all about it."

"Growth, as you know, in both the animal and vegetable kingdom, is the result of the digestion and assimilation of the various elements and compounds which the animal or plant obtains, either through food and drink or, in the case of plants, through the absorption of fundamental elements from the soil through the roots and tissues, or from the air. The

changes which take place are rather complex, and just at present are not of primary importance to the subject which I wish to disclose to you.

"As you are well aware," he continued, "different foods affect the body in various ways. Some foods are more efficient than others; we speak of this relative digestive value of foods as the 'coefficient of digestibility' which means, in simple terms, that a larger percentage of some foods are digested than of others. Some animals can utilize more fiber than others can, and some can make better use of the proteins than others. I have some plants under observation in my laboratory, some of them fed on various kinds of fertilizers, while others have had no application. The difference in the growth and sturdiness of the plants which received fertilizer over those which did not is most marked. You have often noticed adjacent fields of corn, one of which looked in all respects better than the other. This is an example, on a larger scale, of the very thing which I have tried out in my laboratory; one field of corn had more food elements available in the soil than the other."

I nodded in affirmation, too interested to say a word, and he continued his narrative, his dark, piercing eyes fastened upon mine.

"THE statements which I have made thus far are all perfectly actual facts, obviously true, if one only takes the opportunity to look about him in Nature's laboratory, the great outdoors. We take it as a matter of fact that in youth we grow a few inches taller and a few pounds heavier each year. But have you ever stopped to consider why this growth should be comparatively slow?"

The enormity of the suggestion almost paralyzed me. Was the Professor trying to change the order of the universe? I looked at him sharply. Apparently he read the expression of doubt and wonder in my face, for he said sharply:

"I know you wouldn't believe it, but I have long maintained that there must be some exceedingly concentrated form of food elements—some substance in which the coefficient of digestibility is nearly perfect if not absolutely so. I have long upheld the belief that there must be some food in which the residue or indigestible part is practically negligible. If one could find such a substance, would it not be reasonable to suppose that he would derive a much greater benefit from it than from ordinary food?"

"I have been experimenting upon this subject for a long time and at last I have found it—a perfect food which has the power of increasing one's height and weight almost instantly. No doubt you find it difficult to believe, but I can prove my statements; I want you to come to my laboratory with me and witness a demonstration which will convince you that I am no pretender."

I naturally agreed to accompany the Professor to his rooms, for my curiosity had been aroused.

As we passed down one street after another, I found it difficult to keep up a conversation. After some monosyllabic answers, I realized that my con-

WHAT makes plants, and what makes dwarfed specimens of trees are contained in the opinion that these conditions are created by the thyroid gland. If it were possible to systematically stimulate these glands, there is no question but that a very of plants could be produced. It is not at all impossible from a biological standpoint, and from experience gained in the laboratory, we know that it can be accomplished. In "Crystals of Growth," the author gives an excellent tale

panion was engrossed in his own thoughts, so I walked along quietly beside him, meanwhile wondering what surprises the evening had in store for me.

At last we halted before his home. Professor Brontley motioned to me to follow him and in a moment we were ascending the stairs which led, as I assumed, to his laboratory above. I had never been in his laboratory before and consequently I was exceedingly anxious to see the place where all of his wonderful discoveries had been made. As charming as we were, I had never had the opportunity of seeing the interior of this place, probably because of his desire for secrecy in regard to the progress of certain tests which he was making. At any rate, I knew that it was an important experiment that would cause him to invite me inside of his workshop.

Finally we reached the third story of the house, and stopped for a moment before a door which was securely locked. Evidently the Professor was taking precautions against unexpected visitors to this particular room while he was away. He drew a strap of keys from his pocket and after unlocking the door he pushed a button in the wall and the place was flooded with light. I followed him into the room and looked around.

It was an ordinary chemical laboratory, such as I had seen many times before, containing various sorts of apparatus which one usually finds in a place of that kind. The shelves along the side were filled with bottles of different colored liquids and a long table in the middle of the room was covered with racks of test-tubes, Bunsen burners, beakers, retorts, flasks and other laboratory materials. My friend told me to seat myself and observe closely everything that he did.

I WILL attempt to narrate as accurately as possible everything which took place in the laboratory that night. After putting on a rubber apron, my friend placed a pair of ordinary motor goggles over his eyes. He then took a large flask from the shelf, examined it closely and placed it on a tripod. Following this act, he removed from a rack before him, five different colored liquids. From each of these he measured an equal portion, and poured it into the large flask upon the tripod.

"These five liquids represent a preparation of the five most essential substances in our food," he explained; he added nothing further and I did not press him for additional details.

The next thing he did was to light the gas beneath the tripod and standing a short distance away, he watched with suspense the mixture within the flask. For a short time there was no apparent change, and then as the contents became warmer, there was a hissing sound accompanied presently by a crackling and snapping not unlike the snapping of a wood fire. The mixture was now boiling. A light curl of fumes issued from the neck of the flask and there was a slightly pungent, but not unpleasant odor noticeable in the room. The Professor allowed it to boil for possibly two minutes and then turned off the gas. He stirred it slowly and then dipped a piece of blue litmus paper into the flask; the paper turned red, showing that there was an acid reaction.

"Now for the last step," announced my friend, and added a few drops of a light blue substance

from a bottle near by. There was a sharp report like a pistol shot and a shower of yellowish-brown crystals fell upon a tray beneath the tripod. My friend carefully collected these crystals and then turning to me he stated in an excited tone:

"It is finished as I had planned, and upon these crystals in my hand depends the success of my experiment. You have witnessed a test of synthetic or artificial digestion; these crystals are the most concentrated and efficient food substance known, to promote growth. Watch me and notice their power."

The experience was too uncanny for description. I felt terror stricken as I watched him, and had an almost uncontrollable impulse to shout for the sheer relief of my overtaxed nerves, but by a supreme effort of will I resisted the inclination.

He placed two of the crystals in his mouth and swallowed them.

For perhaps five or six seconds no change was apparent; then a shudder passed over his frame and before my very eyes he commenced to increase in size. You have probably been away from home for some time and upon your return noticed the increased stature of some young friends. You remembered how much they had grown while you were away. But here before my naked eyes, growth was taking place immediately. It was almost unbelievable.

He soon towered over me like a giant. He grew so tall, that his head touched the ceiling. He began to walk toward a chair and sat down. Suddenly he stopped growing.

"My height!" he said, "is now about twelve feet, a little more than double my former height. If I had wished to become still taller I could have done so by taking more of the crystals. Think what a relief these crystals will be to mankind. No more under-developed children! no more short men and short women. Tomorrow I shall show the world that I am a living proof of the existence of a super-food, the crystals of growth. Try one yourself, Jamieson, and increase your size."

Thus speaking, he offered one of the crystals to me. I was tempted to laugh at the preposterous suggestion and then I looked at his face and realized how serious the Professor was. I was horrified and knew that with my friend in his present state of super-elation at the result of his experiment—there was an expression of mad fanaticism upon his face—the situation demanded tact of the most delicate nature, if unpleasant and possibly fatal consequences were to be avoided. So I decided to humor him.

"Why, Brontley," I evaded, "I don't need any of your growth crystals. I'm tall enough to suit me, and besides I know that they will do all that you claim for them, so what's the use?"

In a second I realized that he was furiously angry at my refusal to take the crystals. He came towards me and seized me by the shoulders. "You little shrimp!" he snarled, "I'll show you whether you need them or not" and he began to shake me. I strove to ward off his hold upon me, but it was useless. I was like a child in his grasp and it seemed as though he would shake my head loose from my shoulders. My brain reeled, the objects in the room were becoming dim and seemed to be swimming around me. I seemed to be losing consciousness;

there were voices, indistinct and numbing in my ears, and then . . .

"What's the matter, old man?" I found myself on the floor in my room, and looking up I saw the face of my pal, Jack Hudson, gazing down at me in perplexity. "I've been trying to wake you up for the last three or four minutes," he declared. "Hurry up or we'll be late for the show," he added, and then, "What's the matter? Did you see a ghost?"

When I had related my experience to my friend, he slapped me on the shoulder and told me that hereafter I had better cut out rich pastry at night.

My friends claim that it was only a dream, but I know that there was a peculiar odor on my clothes,

such as one associates with chemical laboratories; that my friend Professor Brontley disappeared on the same evening, on which I had my peculiar experience and that he has not been found since, and furthermore, an examination of his laboratory after his disappearance, showed it to be exactly similar to the one in which I had my memorable adventure. The articles in the laboratory were in a state of confusion—bottles opened and broken, chairs overturned and the room in general in a state of extreme disorder. The opinion of the majority of those who examined the laboratory was that a violent combat of some nature had taken place. But, the crystals of growth were nowhere in evidence.

THE END

THE UNDERSEA EXPRESS

By J. Rodman

(Concluded from page 873)

appearance of a blue haze in the distance. Land! It became more distinct with each passing second. But just as I was beginning to watch for landmarks on the distant cliffs, the word was given to go below. There I watched Larkin dive our ship into the depths and lay a course for the Channel. Lights soon began to appear—red, green and white, some flashing, others unblinking, continuous—forming a pattern so complex and confusing that I wondered how a human being could guide us through the maze.

True to form, old Judson strode in to watch, with narrowed eyes, the actions of his protégé among the lights.

"The red lights are shoals and rocks," he explained for my benefit. "The first one we passed was Wolfe Rock. Yes, the white lights indicate a city, though there are exceptions to the rule. That's the Falmouth Light directly opposite. There's no submarine channel in Falmouth; subs have to enter the harbor on the surface. That double white light off in the distance is the entrance to the Plymouth Channel."

THE END

I became intensely interested in this submerged galaxy and the time passed so quickly that it seemed but a moment before we had rounded the green and white blinkers of Ramsgate and begun to bear down on the steady glow of the Chatham Beacon. We slowed down for the entrance of the Chatham Channel, but once within its confines, Larkin kept the speed indicator hovering around 35 knots. We glided swiftly past the submerged docks of Chatham and soon approached the brilliantly lighted passages beneath London. When we reduced our speed again I caught sight of the unmistakable lamps of the Express Company Landing, and as Larkin eased us into our berth and the bumper side-clips snapped shut, I knew the journey was ended.

I said good-bye to Larkin and his chief in the passenger elevator, so that upon reaching the street level, I immediately stepped out upon the crowded thoroughfare. A clock on Piccadilly registered four o'clock less three minutes and I knew then that Captain Judson had saved the \$50,000.00 guarantee and the crew of the Bristol as well.

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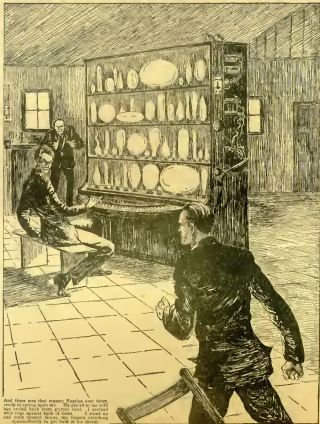
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The RIOT AT SANDERAC

by Miles J. Brener, M.D.

Author of "The Man with the Strange Head" and "The Stone Cat"



And there was that manner, familiar over there, ready to spring upon me. He glared at me with lips curled back from galled teeth. I needed mine eyes against both of them. I needed ear and nose toward them, my fingers clenching spontaneously to get hold of his throat.

THE courts have started their slow, blundering grind at Sanderac.

First there came the newspaper headlines, screaming the shocking news over the country. The next day the columns went into details concerning the unaccountable outbreak of rioting in the little mining city. Nearly two hundred dead, buildings burned, property destroyed, and no one knew the cause. The nation stood aghast, because the perpetrators of the ferocious massacre were those who had until then been solid and respectable citizens.

I happened to have been there when it occurred. I told my story. I was scoffed at and received no attention. The courts continue to grope ineffectually about in circles. How futile they seem!

The town is built about the same head. Its population is about half American, half foreign labor. Among the latter is a colony of Russian refugees, largely Marxian Communists, or as we know them, Soviet Bolsheviks. Their meetings were watched by the police, and some vague, ridiculous rumors started that they planned organizing a Soviet right there on Lake Superior. But no one took it seriously. On the whole, the Bolsheviks lived harmoniously with the five thousand Americans. Even the refugees belonging to the Russian aristocracy and intelligentsia got along very well with the Reds. Such is the leveling influence of Americanism.

I was visiting an engineer friend of mine at Sanderac. This was my first visit to Grant since our college days at the "Boston Tech." He had gone straight to the mine job, while I had a government position which took me all over the country. I still remembered Grant as a fellow of uncanny ingenuity as well as ridiculous absent-mindedness. He was overjoyed to see me, made me put up at his home, and took me all over the town—the town which has now become so famous.

"I have often wondered," I said to him at dinner, "why as brilliant a man as you are, is willing to bury himself here out of sight. I looked forward to your accomplishing some sensational thing in the world."

"Well, you may not be so far wrong at that," Grant said with a smile that seemed to indicate he wasn't telling everything. "This is an ideal position for me; not much work, lots of leisure, plenty of money. I'm working on things of my own, you see."

I knew then that he had some sensational plan worked out. From that moment on, I gave him no rest until he had started out to tell me about it. I hurried myself and him through the rest of the meal. Grant took me out to a concrete shack near his building at the mine works.

It was heavily locked. Within was a workshop.

From the looks of the tools and the small parts, it was evident that he was working on some delicate electrical stuff. A smooth-shaven, sad-looking man of about fifty, bent over a bench, was working on some things strung full of green-insulated wires.

"This is Sergei, my assistant," Grant said, introducing me. Sergei's face showed refinement and intelligence. His country was of the European type, which Americans so admire but cannot imitate. He moved away to turn on more lights.

"Queer fellow," Grant said in an undertone. "He won't even associate with the other Russians. Used to be a musician. The Bolsheviks killed all his family."

For a moment I was more interested in the Russian than in the machine, but he was now bent over a table, studying a blue-print and putting pieces together. There was a sort of hopeless droop about him; yet he worked swiftly and with marvelous skill.

"Here we are!" explained Grant. "This is what I've spent the last ten years on."

"What's it supposed to be?" I inquired. "It doesn't suggest a thing to my mind."

There was a semi-circular keyboard, like those on large pipe-organs. The rest of it was built up into a sort of a cabinet, with bulbs, instead of organ-pipes. It was something like an exaggerated and caricatured radio sending set. There were scores of the bulbs, globular, pear-shaped, gourd-like, flask-shaped, and of all sizes from that of an egg to one as big as a pumpkin. Grant moved a switch. The complex array of bulbs filled with a pale white glow.

"They look as though they might be electron-tubes," I remarked. "Is it some form of magical instrument?"

"No. Not exactly. Set down," Grant was elated.

So, while I found a chair, he took his place on the bench in front of the organ thing. He ran his fingers around over the keys. I stared at him in surprise. Not a sound came from the instrument. Was it some effect of light or color that I should look for? I looked closely, but the bulbs glowed quite unchanged. Was he out of his mind? Not knowing what else to do, I sat and waited patiently.

I sat bowed forward with my chin leaned on my hand and my elbows on my knees. Grant's movements at the silent machine became monotonous and depressing. The dingy, concrete walls were monotonously gray. The gloomy interior of the

shack made me think of some graveyard of human desires. Even the futile wires sprawled all about, gave a morbid impression. I grew so lonesome and discouraged that I could feel the muscles of my face droop and sag. Grant, failure of a fellow that he was, seemed somehow ragged and dismal as he hunched

MUSIC, we are told, charms individuals, not only instantly. If you have ever seen a Hindu charm a snake by means of his flute, you will understand what we mean. But not all music charms, some music definitely profits our ear organs. There are certain factors of music, certain sounds, that arouse among subjects a sort of ex. as in well known. If you ever listened to a cat's purr on the floor, you will understand what we mean, too. But there is more, there are sounds which are no longer heard by the ear, as such. Where the vibrations go beyond some 25 thousand per second, the ear no longer perceives them as sounds, yet the sounds are there, quite dead, as a matter of fact. Recently, for instance, Mr. Hugo Grossbach, holder of this publication, performed certain experiments at station WBBY, where the audibility of the audience was tested, by means of an audio frequency oscillator. The particular oscillator used produced audible vibrations from a frequency of 100 up to over 30,000 cycles per second. It was found that beyond 15,000 vibrations per second, most people could hear nothing. It was interesting, however, that a number of listeners reported strange effects noted on various occasions. Some drows and convulsions seemed to be able to hear; so, while the head shaker just about to become benign, it was noisy enough to disturb certain deeply.

It would seem to me that in the present story—which not only contains excellent science, but is an exceptional serialization story as well.

ously pawed the keys. I watched the heavy smoke drag across the square of leaden sky visible through the window, in the same way that my useless skill was drifting across a colorless and dreary world. The only place for me was at home with my mother, my mother of the white apron and sunny hair, who made gingerwads for me. But my mother was dead.

Grant stopped his activity at the keys and turned around. He looked at me intently for a long time. Then he turned around and started playing again on that dumb, futile keyboard.

He danced around on his seat like a clown; like a travesty of Paderewski. He crooked his fingers up to claws and brought them down wildly on the keys, and then ran them through his ruffled hair. His knees worked comically up and down as he manipulated some sort of pedals. He looked so silly that I was forced to smile. Then I leaned back and laughed. I laughed at him, and at the funny little zig-zag wires on the bench near me, like wiggling rat's tails, and at the comical shapes assumed by the waps of smoke outside the foolish little window. The back of Sergei bent over his work was like a hump on the back of some drill-corned, it made me laugh till I roared. The whole adventure up on the mountainside with a coal-mine below and a cracked inventor pounding on an organ that wouldn't work, was all so impossibly funny that I laughed till I was hoarse.

GRANT was sitting motionless again, gazing fixedly at me. As my laughing died down, he turned again to the keys.

He played slowly, if I could call it playing, since I heard nothing. The crazy fellow, trying to deceive me that way! I grew impatient at him. Did he think I was a fool? I had a strong notion to tell him what I thought of him and his abortive invention. His slowness was irritating. I knew he was doing it to irritate me. I felt like giving him a shove and knocking him off the seat—and locking him into a corner. My fists clenched and my cheeks tightened. Why had he brought me into this barred and locked stone cell, full of poisons and dangerous currents? And there was that maniac Russian over there, ready to spring upon me and kill me unawares! The coward! I looked at him. He straightened up and glared at me with lips curled back from gritted teeth. I seethed with rage against both of them. I've got to get them both out of my way before I can escape. Grant first. I stood up and stole toward him, my fingers clutching spasmodically to get hold of his throat. I wanted to strangle him, to break his bones—

He whirled around and saw me. His hand shot out and moved a switch. The glow in the bulbs died out. A sudden illness went through me, my knees went weak and I collapsed on the floor. Now everything was peace. I was myself again, wondering what had been happening to me.

Slowly it dawned on me that Grant's "playing" must have had something to do with these storms of emotion.

I sat up. Sergei was sitting in a chair, pale and clucking a bench.

"That last effect was foolish of me," Grant was saying. "You might have beaten me up before I realized what was happening. My own fault."

I stood up, feeling much better physically. Grant was again the same old good-natured, absent-minded

scientific child. Sergei also walked away in dejected silence. He didn't look fierce at all, only humble and quiet, and very much a gentleman. Think of it, a concert musician now at a mental job. And a wife and two girls murdered by Bolsheviks!

"Narrow escape, I had," Grant laughed again, as I stared around, unable to find words. "And poor old Sergei was on his way out to clean up his Bolshevik neighbors!"

"What's this?" I finally demanded. "What's been happening to me?"

"You will admit that it affected you powerfully?" Grant smiled.

"It'll say it did! It nearly drove me crazy. What is it? How is it done? Tell me quick, or I'll get you yet!"

"When I explain," Grant warned, "you will be disappointed at the simplicity of it."

"I'm willing to be."

"You know well," he began, "that emotions are purely physical states, produced by the activity of the ductless or endocrine glands. Stimulation of the suprarenal produces rage; that of the thyroid, fear and anxiety, that of the gonads, love, and so forth. Warm up the gland, increase the amount of its secretion, and the emotion follows. By mixtures and combinations, an endless chain of emotions may be produced. That is well established knowledge."

"Old stuff!" I agreed.

"The next step is, that the operation of the body cells is merely a matter of the exchange of electrical charges. Secretion, nerve action, muscle contraction, all you do, is merely a movement of electrons from here to there."

"Nothing new or startling about that so far," I commented.

"The rest isn't so old. I figured that instead of waiting till the exchange of electrons in the body takes place by chance impulse and accidental combinations of perceptive stimulation, I would make them for you at will, by shooting electrons at you out of my vacuum tubes. The numbers, velocities, and quantity-rates of discharge of negative electrons, and various varieties of positive ions, determine whether it is your suprarenal or your pituitary that is warmed up. Your body obeys, can't help itself."

"It is simple," I admitted. "But it is uncanny. I certainly felt real emotions."

"They were real emotions. And I had a real one, too, when I saw you coming—I was scared!"

I sat down to think over the astounding thing. He had sat up there and played on keys, and made me feel as I did. And since feeling controls action—that man had an instrument that could make people do anything. He had the world at his back.

"You just got here in time," he was saying in a most master-of-the-fact voice. "We were about to begin taking the machine apart and moving it to a theater. I want to give a public performance."

In fact, Sergei was already taking out the electron tubes and packing them in cotton-lined cartons.

"I'd like to see that," I said eagerly, my mind full of interesting possibilities. "When does it come off?"

"By all means come. That will be an excuse for you to remain with me for a few days. I am planning the show for next Friday. Sergei can almost handle the moving alone, so you and I can have lots of time together, for my work at the mine is light."

GRANT'S advertising for his public performance was very modest. I was afraid that he would not have much of an audience. He announced in the newspaper and on billboards that he had a scientific discovery for influencing emotions in a new way, without the medium of pictures, music, words, or other common means; something different. He told me that he did not care to have a big crowd for the first performance.

But the house was packed full. Grant's townspeople apparently knew him, and expected something worth while. The heat of excitement through the theater swelled and waned in rhythmic waves as the people sat and looked at the organ keys and the assortment of odd-shaped bulbs. The theater was full; people continued to crowd in, and there were more people outside. And still Grant had not arrived.

He had tested out the machine in the afternoon and had waited eagerly for the evening. Then, at 7:30 P. M., he had been called to the power-house at the mine, where a safety-valve of a loaded boiler had jammed. Now it was 8:15, and the densely packed audience shuffled impatiently and broke out into occasional bursts of clapping to encourage themselves.

At 8:23 a messenger arrived from Grant with a note. Sergel, who had been hovering anxiously about the machine, took it, glanced at it, and handed it to me. The note was addressed to me.

"Bad job here," it read. "I don't know whom else to ask, and therefore I should like to have you get up and explain to the audience what the situation is. Tell them that I shall be back in an hour. They may go out, and return in an hour if they wish GRANT."

Facing an audience has always been unpleasant to me, even for such a trifling matter as this. It took me some minutes to screw up my courage, but eventually I was in front of them.

The people looked queer. Their eyes were big and glaring. They sat up rigid. Everyone's teeth showed in an ugly snarl. Here were the town's best people, business and professional men whom I had previously met; well dressed women; as good a group as one could see in any city. But now they looked like some savage beasts.

Then, suddenly I understood. A glance backward had shown me Sergel seated at the keys, his body cowering, his fingers busy, every inch a musician. I gave one more terrified glance at the audience. People's arms jerked convulsively. One by one they were leaping fiercely to their feet and singing for-

ward. I was desperately afraid for my own safety, and I turned and fled across the stage and out of the rear door.

I ran—something I was not accustomed to do. I puffed and my head throbbled. I ran for the power-house where Grant was working on the jammed safety valve. An overloaded boiler was less dangerous than the fiercely aroused audience. The uproar of shouting and trampling behind me, lent speed to my clumsy progress.

I began to feel relieved when I saw the boiler-house in front of me. Why I do not know, for what could Grant do? Then, the boiler house acted queerly. It bulged outwards. The tall chimney stuck bent in the middle like a knee, and seemed to hang that way for an interminably long time. There was a great spout of steam, and a terrible boom that reverberated and roared for several minutes. Before me was a vast cloud of steam, out of which black objects flew high in all directions. Some of them seemed to be men.

I stopped. Behind me the clamor of shouting and trampling was increasing. I looked back and saw flames shooting high in the air from the theater building. A mob of infuriated people was running, surging, pouring through the streets, brandishing things. Terror possessed me. Which way should I run?

However, I soon noted that they were not after me. They turned and flowed to my left, toward the mountainside. I stared at them, amazed, for a while. In the mean time, shots and screams and hideous thuds came from the section on the mountain slope where the Russian miners lived. Flames shot up here and there. The attack had fallen on the Bolshevik quarter, which was being swiftly wiped out.

For a moment I stood frozen in my tracks. Then I dragged myself to the garage where I kept my car. I dashed out of that place in the twilight, without a hat, without my baggage—without my mind, almost.

Now, the courts are foolishly, blunderingly groping around, trying to fix the blame. They have scores of citizens in prison—perfectly innocent citizens. I tried to tell them of Grant's instrument, and of Sergel who was a musician and whose wife and daughters were horribly murdered by Bolsheviks. But I was only told that I had not been called as a witness, and if my testimony was required, I would be notified.

THE END

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THE PUBLISHERS.

BELOW THE INFRA RED.

by George Paul Baner



At the very center of the two opposed forces two gigantic figures were arrayed in the terrible ambience of death: one white and one black. There to stand they stood, the brilliantly white robes of their garments and the deathly pallor shining from all the features, beardless black ruler, dark terrible with its hideously serious aspect. It seemed like a desperate conflict between the forces of light and darkness, good and evil, angel and demon.



"EVERYTHING material is visible!" I stated flatly.

"Pardon me for disagreeing with you!" boomed a deep sonorous voice behind me.

I swung around in astonishment and with a touch of asperity, to stare into a pair of humorous, wide-set and large, blue eyes, behind gold-rimmed spectacles.

The owner of the eyes nodded pleasantly, and smiled in a quiet friendly way that immediately attracted me to him.

"I can prove my assertion in a way that will convince you!" he continued with quiet assurance, but without the least touch of dogmatism.

IN this manner I became acquainted with Professor Carl Winter, Ph.D. It happened in Doran's book store; and Doran himself, with whom I had been conversing, introduced us.

Quite a conversation ensued between the professor and me. And when at last we parted I had promised, at his urgent request, to visit him at my earliest convenience, little dreaming of the strange amazing adventure that my promise would lead to.

It was about two weeks before I was able to keep my promise. Professor Winter lived on the outskirts of town, in an old-fashioned brick residence of two stories, surrounded by an extensive garden, and shaded by a great number of magnificent oak and chestnut trees.

An old man-servant, whose name—as I later learned—was Carl Summer, admitted me. He was cook and general factotum to the scientist, who was a widower and childless. The queer coincidence of their similar given names, and the diametrically opposite meaning of their surnames made me smile when I came to think of it.

I found the professor in his very completely equipped laboratory, examining something in a large test tube.

"Come in, come in, Misser Barton!" he cried cheerfully, "I am certainly glad to see you, I am sure," he added as we shook hands.

Having taken the comfortable chair at the table that he indicated, I leaned back and gazed at my host.

He was a large man, well over six feet tall, and built in proportion. His brilliant blue eyes were indicative of the scientist searching, penetrating and analytical. His broad high brow, bulging at the temples, denoted not only the student and thinker, but also the idealist and dreamer. His straight nose, strong mouth and firm jaw proclaimed him a man of energy and determination. However, the face as a whole was expressive of kindness, sympathy and warm humanity.

In spite of his age, which was somewhere between fifty and sixty, his hair was still blond, except for a tinge of gray at the temples.

He pointed to a large open volume written by an eminent authority on physics, which lay at my elbow on the table, and his voice was vibrant with energy as he spoke:

"Referring back to the conversation we had the other day at Doran's, I wish that you would kindly read the article I have marked, while I, with your permission, am completing this text."

When I nodded acquiescence, he added:

"I am quite certain that the article will serve to elucidate some of the points I advanced during our conversation at that time."

I smiled. "I certainly do need a great deal of light on certain things, and I am always willing to learn."

"I congratulate you upon your attitude," he said cordially.

I adjusted the book in question upon my knees, and read the following interesting postulate:

"While vibration ceases to affect our senses at 40,000 vibrations per second as sound, we find ourselves conscious again of periodic motion when it reaches 398 trillion times per second; then we hear with our eyes, or see with our ears, whichever you choose. The sensation is in all cases the effect of motion."

"There is much food for thought, or speculation in the thought that there exist sound-waves that no ear can hear, and color-waves that no eye can see. The (to us) long, dark, soundless space between 40,000 and 398 trillions, and the infinity of range beyond 764 trillions, where light ceases in the universe of motion, makes it possible to indulge in the speculation that THERE MAY BE BEINGS WHO LIVE IN DIFFERENT PLANES FROM OURSELVES, AND WHO ARE ENDOWED WITH SENSE-ORGANS LIKE OUR OWN, ONLY THEY ARE TUNED TO HEAR AND SEE IN A DIFFERENT SPHERE OF MOTION."

I STOPPED reading and put the book down thoughtfully. "Very interesting!" I commented. "But what is the idea?"

The professor turned and gazed at me quizzically.

"Did you note the part printed in capitals?" he questioned.

I nodded. "Yes; in fact I read that part of the sentence twice."

"Well, what do you think of that?"

I shook my head dubiously. "I am inclined to think that the eminent scientist's imagination ran away with him."

Professor Winter smiled in a peculiar manner, and his eyes shone brilliantly through his spectacles. "Ah! So you think that there is no possibility of an invisible world around us?"

"We-e-e—! I would not say impossible, because the progress of modern science seems to demonstrate that we can hardly presume to draw the line between the possible and the impossible, but at least I would consider the matter highly improbable, and altogether inconceivable."

For a few minutes the professor silently busied himself with his chemical apparatus. Then he turned to me again, and there was an intense feeling in his manner and voice when he spoke:

"My dear fellow, what would you say if I were to tell you that I am upon the point of making the

HERE is a different sort of story, one that we instinctively know the larger proportion of our readers will accept enthusiastically. The old idea that there are other planes upon which beings exist has been exploited by many authors, but it comes to the front again in a fairly different manner this time. The story is bristling with adventure and exciting interest combined with excellent science and will hold you spellbound to the end. Incidentally, the scientific theory put forth in this story is quite good, besides being plausible as well.

say impossible, because the

seemingly impossible a reality; if I were to tell you that I am about to perfect a machine which will enable me to penetrate into that world of vibration and matter that I feel certain exists below the plane of the infra-red?"

I laughed amusedly. "If you were to tell me that, I would no doubt conclude that you were joking."

He smiled gravely and nodded. "I would hardly blame you."

Then he seated himself in a chair close by and looked toward me as he continued: "Nevertheless, such are the facts! My experiments are nearly finished, and I am about to step into that unknown world! Furthermore, I would like to have a skeptic like yourself share the experience with me."

I stared at him aghast. I could not believe that I had heard aright. Finally I burst out with: "Man alive! Do you mean that you are in earnest? And that you have actually and scientifically discovered a way to see, hear and otherwise sense the invisible and intangible?"

He nodded quietly. "Yes; I mean just that—was!" He raised his hand as I was about to re-construct again. He pointed to the still open book which I had placed upon the table, and continued:

"As you have read in that book, the highest speed of vibration which the auditory apparatus of man is capable of registering is forty thousand vibrations per second. Above that the ear is incapable of hearing anything. Why? Because the vibrations become too rapid to affect the tympanum and chain of bones of the middle ear. In other words, they cease to be sound as far as the human ear is concerned."

"Now, it is a well-known fact that some animals can hear sounds plainly which the finest attuned human ear is unable to register. What does that prove?" It evidently proves a finer adjustment or attainment, as you will.

"But at the other, the higher end of the scale, we find that the lowest vibrations of light, which the human visual apparatus is able to perceive, is the color of red, the deepest shade of it, that vibrates at the rate of 398 trillions per second. Below that the eye is unable to distinguish motion of any kind."

"You must admit that the space between forty thousand and 398 trillions is tremendous, inconceivable. Can you really believe that this great space in nature is without motion or vibration of any sort? Does it appear reasonable or logical to you that there should be such a waste in creation?"

"Nature abhors a vacuum. You know that as well as I do. As far as science has been able to determine, there is something everywhere. There is no emptiness anywhere in the universe."

"So now, with these facts in mind, I want you to listen carefully to what we are going to do, you and I."

For several minutes, while I gazed at him in fascination, he sat there in deep thought. At last he resumed:

"Taking all these facts into consideration, I, quite a while ago, conceived the idea that if it were possible to raise or increase the sensitiveness of the human auditory apparatus sufficiently, then the field of audible vibrations could be vastly extended."

"At the extreme other end, on the plane of color vibrations, I conceived, in a similar manner, that if it were possible to attune the visual organs to respond to a longer wave-length, then the vibrations

below the infra-red could be perceived, and naturally also the things belonging to that plane."

"Consequently, I began to experiment until my idea assumed concrete form; and I conceived an apparatus, part electrical and part chemical, by means of which both the auditory and ocular organs of man could be caused to vibrate artificially in such manner as to become sensitive to the required wave-length."

"After many experiments and much expenditure of patience, energy and money, I finally attained the right results. My machine is about completed now, and I shall soon have the pleasure of inviting you to share with me the most original adventure that could be imagined."

HE sprang excitedly to his feet. "I know that such an invisible world exists!" he cried with flashing eyes. "I feel it—my intuition tells me so. And, by heaven!—I am going to prove it!" he finished with a vehement gesture.

I sat there as if in a trance. A great fantastic world of possibilities had opened up before me. The logical manner in which Professor Winter had ramped fact on fact had broken down the barrier of prejudice and skepticism in my mind to such an extent that I almost admitted to myself the possibility—absurd and fantastic as it seemed—of the scientist's scheme.

Could such a thing be really possible? Could the organs of sight and hearing be really attuned in such a way as to make visible and audible a heretofore unknown world in the universe of matter? The idea fascinated me gradually to such an extent that it was with a distinct effort that I aroused myself.

I recovered to find my host regarding me with a humorous twinkle in his eyes. "I see that the skeptic is not quite so sure of his ground," he commented.

I laughed. "I admit that your logic is very convincing and plausible. But just the same, I'm from Missouri! and you will have to 'show me.'"

He nodded energetically. "And you shall be shown, I assure you, just as soon as my machine is completed."

IT was about ten days later, in the early part of the morning, the telephone bell rang, it seemed to me, a bit violently. Professor Winter was at the other end of the wire, and I noticed subdued excitement and tension in his voice when he spoke.

"Can you come at once?" he inquired.

"I think I can. Is it important?"

His laugh, a trifle strained, came to me. "Important! Well, rather; and you had better come prepared to stay all day and the night, too, I think."

When I hung up the instrument a sudden excitement took possession of me, and my hands trembled as I packed my things into a bag. I knew that the great adventure was just ahead.

Again Summer admitted me when I arrived at the professor's house, but this time I noticed that his face wore a very troubled expression. Without a word he took my bag and led the way.

I found the professor in his laboratory, pacing up and down. His face lighted up when I entered.

"Ah! Mister Ramon, you have really come—I was a little afraid that you might change your mind."

I laughed a little nervously. "Well, to tell the truth, professor, I did have half a notion to excuse

myself. But—my curiosity got the better of me, and here I am."

He smiled. "I would have been very disappointed if you had not come."

I gazed searchingly about the laboratory. "Do you mean to say that you are really ready to try the experiment now? And that you are ready to enter into the mysteries of the hypothetical world below the vibrations of the infra-red?"

He nodded gravely and turned toward the library with a brief: "Please come this way!"

Now that things were really coming to a climax I felt very much like the little boy in the ante-room of the dentist when he is about to have a tooth pulled. However, I followed my host into the spacious library adjoining the laboratory, and saw a strange sight.

In the very center of the great room, the window shades of which were closed, two large armchairs were standing side by side, almost touching each other. At the outer side of each chair was placed a strong table of oak and steel, covered with a mass of dining apparatus.

The most conspicuous thing on each of the tables was a heavy hollow base of burnished steel about two and one-half feet long, two feet wide, and one foot or thereabouts high.

The polished steel base was bolted to the heavy oaken planks of the table top, and was surmounted by a strong steel frame in the form of a lateral cross, supported by four steel columns.

Each of these columns was about sixteen inches high, and securely connected to the heavy cross piece at the top. This frame formed the support of two large spheres of metal, each about twelve inches in diameter. One of them seemed composed of burnished copper, the other appeared to be made of a silver-like metal.

These spheres were each connected to a heavy vertical shaft of steel which passed through the center. The lower ends of these shafts passed down into the interior of the steel bases, while the upper end of each was supported in a ball-bearing in the cross piece on top.

Two slightly smaller sized stationary glass globes were attached to each of the heavy supporting columns at the long ends of the cross, by means of felt-padded metal clamps, in close proximity to the nearest of the center metal spheres.

The globe nearest to the copper sphere contained a transparent liquid of a beautiful emerald hue. The one next to the silvery sphere held a mixture of the color of ruby.

From each one of the two metal supporting columns at the long ends of the cross, heavy insulated flexible wires ran to the arm chairs.

Upon the seat of each chair lay a strong head-dress of leather, resembling an aviator's cap. The wires from the glass sphere containing the green liquid, terminated at the sides of the cap, where the ears would be. The wires from the globe with the ruby fluid led to heavy goggles at the front part of the head. These goggles were of a peculiar construction, and contained double lenses with a space between them.

Professor Winter pointed to the apparatus and explained:

"To describe the entire apparatus and its operation would perhaps be too technical for your like-

ing and would take too long. The essential points are these: In the base of the machine is the highest speed rotary engine in the world—my own invention. It is operated by electricity. The office of the apparatus is to change the vibration of both the auditory and ocular organs to such degree, simultaneously, that they will be sensitive to the vibrations below the infra-red plane.

"The machines on both tables are identical, except that the controlling switchboard for both is located on my side."

He pointed to one of the chairs, to the right arm of which was attached a small board with a number of electrical contact buttons, and to which a bundle of insulated wires was brought from the base of each machine.

I nodded, only half understanding what the professor was saying. "Are you sure that everything will turn out all right?" I inquired dubiously.

"I anticipate no trouble. At the worst, nothing can happen to our physical bodies. They will be safe in this room, and Summer will watch outside the door. Anything that we might see or otherwise sense can not affect our physical well-being."

"I see," I said. But of course I did not. "Well then—" I continued—"If you think that everything is as it should be, I would suggest that we start, because I confess that I am getting slightly nervous. After all—this is quite an undertaking!"

Professor Winter nodded seriously. "Yes, you are right, and you can never know how I appreciate your cooperation in this adventure."

He held out his hand and we shook hands earnestly.

With very mixed feelings I sat down in the chair that my host indicated. "Just relax your body and your mind, and you will feel better," he advised, while he adjusted the leathern cap to my head.

A few moments later he had fastened on his own headgear. With a cordial motion, he waved his hand to me and touched one of the buttons.

Immediately a high musical note was audible. I gazed toward the apparatus at my left. The copper sphere was whirling madly, and the emerald fluid in the adjoining glass globe seemed to become intensely illuminated.

The musical note rose higher and higher, so that it seemed to tax the auditory organs to the uttermost. Questioningly, I turned toward the professor. He was just in the act of pressing another button. And immediately the white metal spheres on our respective tables began to revolve with inconceivable rapidity.

It seemed as if a thin fog was beginning to envelop the objects in the room. The fog-like phenomenon was getting momentarily more dense. The strong electric lights of the library seemed to become gradually dimmer and dimmer, until they appeared like the headlights of an automobile through a very dense fog.

It was getting darker and darker every moment now. The scientist at my side was hardly visible. And then suddenly the most absolute darkness that can be imagined enveloped us like a heavy mantle.

Temporarily alarmed, I reached out my hand and touched the professor. Immediately I felt his reassuring pat on my arm. I was greatly relieved. Evidently everything was as it should be. With hammering pulse, I awaited further developments.

THERE—was it imagination, due to my overstrained senses?—there seemed to be a faint violet light permeating the Stygian darkness.

The violet light was certainly getting stronger. My senses had not deceived me then. I waited excitedly for—I knew not what.

Suddenly I became aware of another phenomenon. The high musical sound, after fixing my auditory nerve to its uttermost, had completely ceased, and—I was almost certain that I heard a faint sound as of distant singing.

I was now in a fever of expectancy. I felt intensely that some wonderful development was imminent. The violet light was getting brighter and brighter; and in about the same ratio it seemed that the singing sound, as of a multitude, was increasing in volume also.

What was happening? Were we really passing to another plane of existence? Was the experiment of Professor Winter about to be successful? With every nerve tingling, I waited.

All that was now visible was that peculiar fog-like phenomenon, lighted up with the soft violet light. The rest was emptiness. I gazed ever toward my companion, but could see nothing of him either. I seemed to be on a lonely island in a violet sea.

And then—as if through many curtains of violet gauze, I saw all about me, it seemed, the semi-nude figures of gigantic men and women.

Suddenly everything was quite clear, and I gazed upon the strangest spectacle—

I seemed to be in a vast cathedral-like place, as vast was it, that I could not perceive the top of it in the dense violet shadows above me. Nor could my vision penetrate to the walls that I instinctively felt were on either side of me.

Great columns of what seemed to be purple-colored metal, brilliantly polished, rose upward into the unfathomable heights forming wide aisles on all sides of me. I seemed to be in the very center of the widest of these aisles.

Straight down this great main-aisle, in the direction toward which I was facing, and at what might be the end of it, I saw an immense altar-like structure of some material, which at this distance appeared to be white alabaster.

Broad wide steps led to the top of this structure, which was formed by a wide platform, covered above by a great semi-spherical baldachin of what appeared to be blue crystal.

Under this crystal dome, two great golden chairs were placed side by side, and seated upon them, I perceived two human figures—a man and a woman.

Around and in front of this throne, and on all sides as far as the eyes could see, a great multitude of people were gathered. Thousands they seemed to be, of such physical perfection as to remind me of the fabled gods and goddesses of ancient Greece.

Very tall they were—all of them. I judged the men to be at least seven feet in height, and the women about six. The faces of both were beautiful and hairless, their coloring an exquisite white and rose, their hair, which the women wore long and unrestrained, and the men down to their necks, was of every shade of blond, and of a fine wavy texture.

Their heads were crowned with chaplets of gorgeous, fragrant flowers, and garlands of the same flowers adorned their bodies. With the exception of very broad-elastic-cloths, of vari-colored shiny

material of fine texture, the men were nude. The women were attired in a sort of simple sleeveless tunic, supported from the shoulders by narrow straps of the same material as the men wore.

They all stood erect, with arms upraised above their heads, facing the two upon the throne. And they sang an anthem of such wonderful exquisite harmony and volume, and such liquid clear tone as I would never have believed existed in the world of sound.

I GLANCED toward Professor Winter, whom I had nearly forgotten. For a moment I was terribly afraid, because I could not see him. Suddenly one of his exclamations came to my mind. I gazed down at my own body, and—as I expected—saw nothing.

It was a strange, eerie feeling. I seemed to consist of nothing but brain. To all intents and purposes I was an invisible being, even to myself. But a few moments of reflection reassured me. Apparently Professor Winter's experiment was a perfect success; a monument, as it were, to his genius. As far as my senses were concerned, I was on the sub-infra-red plane, though my physical body was on the earth plane. It was in truth a most fantastic situation.

To reassure myself beyond doubt, I felt toward him with my invisible hand, and to my great relief, touched his body. He gave my hand a reassuring squeeze to indicate that everything was in order.

Naturally, I thought, as long as the machine in the professor's library was running and our visual and auditory organs therefore were tuned to a vastly different vibration, we could not possibly hear or see each other. As an experiment, I shouted, but I heard not the slightest sound.

It was a marvelous experiment and an amazing experience, and I was conscious of deep gratitude to the scientist for having given me the opportunity of sharing it with him.

We must have been invisible to the sub-infra-red people also, because these immediately surrounding us gave not the slightest sign of noting anything out of the ordinary.

The singing ceased, the people lowered their arms and gazed expectantly toward the great throne.

Presently, amidst absolute silence, the two beings on the throne, whom I judged to be the Rulers of these people, rose from their seats, came to the outer edge of the throne platform, and faced the audience. And even at that distance I realized that physically they were superior even to any of their own subjects.

The man wore a sort of tunic of white shining cloth, which came almost to his knees, and was suspended by a strap of gold from his left shoulder, leaving his right breast free. Upon his broad chest an emblem in the shape of two outspread wings glittered and scintillated with every movement of his perfect body.

His companion Ruler wore a similar sleeveless tunic, but suspended from both shoulders, and dropping just below the knees. And upon her perfectly rounded bosom glittered a similar emblem of double wings. Their feet, like those of their people, were bare. And they also had adorned themselves with the beautiful strange flowers.

I watched, continued to watch them, fascinated.

Each one raised the right hand with the palm outward, and placed the left hand over the heart. And while they stood thus they sang a duet of such harmony and perfect sympathy that I was completely entranced.

In some mysterious manner their singing suddenly became intelligible to me. Through some marvellous process of the mind, I was able to receive telepathically the thoughts they meant to convey, without knowing the language itself.

Our language is very crude compared to the perfect song-language of the sub-infra-red people. But the following is approximately what they, the Rulers, conveyed:

"Beloved people! in the name of the Ruler of the visible and invisible universe, welcome!"

"This day, which marks an illuminated period in the cycle of our reign, beloved brothers and sisters, fills our hearts and minds with great happiness. For it has proven to us anew the strong divine bonds of the affection which unites us all together into one people, one family."

"And it shall ever be our greatest task and sincerest endeavor to continue with you in the same happy harmonious relationship. Receive, therefore, our blessing, and vibrations of affection for your devotion and fidelity, and let us ask also for the blessing of Him who rules the universe."

With that they raised both hands heavenward, and together with the people who followed their example, they sang a short but rousing anthem of gratitude.

An ecstatic silence of some minutes followed the singing as the people and their Rulers stood there with arms still upraised, and faces expressing joyful gladness and hope.

Suddenly a peculiar feeling came over me. I felt that I was gradually rising out of my physical body. It was an indescribable sensation. It seemed that I, the soul, was slipping out of my invisible physical shell, like a snake slipping out of its last year's hide.

The peculiar circumstance about the process was the distinct feeling that in some dim past I had passed through a similar process.

I thought of the professor and wondered what he would have to say about this wonderful phenomenon when, lo! there he was standing at my side, perfectly visible and smiling at my evident astonishment and agitation. What is more, he appeared very much younger than when I had last seen him.

Glancing down at my own body, I found that I also had become quite visible by some wonderful alchemy of nature. And with the ability to see my body once more, came the feeling that somehow it was not the same body, but a new body which pulsated with all the vibrancy and elasticity and joy of youth. I possessed the same tireless energy and buoyancy that I remembered having when a boy. It was marvellous, unbelievable. At last I seemed to have discovered the fountain of eternal youth.

"What in the world has happened now, Professor Winter?" I inquired. "What does it all mean?"

He smiled radiantly, and his eyes, from which the spectacles had disappeared, were brilliant with enthusiasm when he answered: "It means, dear friend, that I have attained more, infinitely more, than I dreamed. It means that the vibrations of our physical bodies were raised to such a degree that our spiritual bodies have temporarily become liberated and separated from our physical shells. To all in-

tests and purposes, we are now inhabitants of the plane below the infra red."

I nodded somewhat dazed. A slow dim comprehension was beginning to filter into my mind. However, there were some things that I was utterly unable to understand and grasp. Therefore I put another question.

"You spoke about ourselves being in our spiritual bodies. I don't seem to be able to grasp that part of it, although, in a dim way, I seem to grasp something of what you mean to convey. What do you mean?"

He nodded with sympathetic understanding.

"I shall explain with the greatest pleasure! The higher science has discovered, and absolutely proven by means of personal demonstration and experiment, that man is a triune being. That is to say, man consists of a soul, which is his real ego or self, a spiritual body, and a physical body.

"The physical body and its sensory organism is the soul's instrument of expression and manifestation while living on the physical plane, by means of which it gathers experience and knowledge for its development and unfoldment, according to nature's law of evolution and progress.

"After the change called death, the soul and its spiritual body, which latter co-exists with the physical body during earth life, withdraws from the dead shell and takes up its life on the spiritual plane where it leaves off on the earth plane. The spiritual world being a material world similar to the physical, but of infinitely higher vibration and refinement, there are then duties to perform, work to do, and experience to gather for the soul, thus it does by means of the spiritual body and its sensory organism, which is identical with, but infinitely finer, than the physical sensory organism.

"In other words, the soul continues to carry on its search for the truth, for knowledge and wisdom in that world as in the physical world, and from it when its time comes, it evolves to still higher and finer planes of existence, in still finer bodies, conforming to and consistent with the vibrations of each particular plane. How far this process goes on no one knows, not even the wisest of the masters of wisdom on any of the planes know.

"Nor is there death; it is only a change to another body, in order that the soul may continue in its evolution. It is all just a matter of different vibration. For instance, if it were possible to so attune the physical sensory organs as to correspond with the vibrations of spiritual matter, then it would be quite possible for any of us to see or otherwise sense anything that goes on in the spiritual plane closest to earth. But this would conflict with natural laws, the laws of vibration, and it is therefore impossible. No one can change or overcome the laws of nature."

I GAZED in wonder at the man of science and marveled at his knowledge. "But," I objected, "have we not just found that the laws of vibration, as you call them, can be changed? Are we not in a spiritual world in our spiritual bodies? Has not your machine accomplished the impossible?"

He shook his head and smiled quietly.

"No, you are mistaken. Since our materialization on this plane, I know that rather than having changed the attachment of the optic and auditory organs, my apparatus has raised the vibration of the entire

physical body to such a degree as to enable the spiritual body to pass through and out of the physical shell.

"Let it be understood, however, that this plane is only another physical plane of different vibration, and that we are able to realize these vibrations with our lower spiritual senses. Moreover, the body in which you perceive me is not my spiritual body; it is only a vito-chemical substance which covers my body and makes it visible and tangible on this plane, because this substance is of the same vibration which belongs to this plane."

I shook my head. "It's too deep for me, professor, even after I have experienced it. And I am willing to take your word for it."

We had become so engrossed in our conversation that we quite forgot our environment. Perfect silence reigned. But it seemed to be a silence vibrant with human magnetism.

We gazed about us. The sub-infra people apparently were able to see us also, for every eye in that vast place was fixed upon us in seeming wordless awe and astonishment.

Presently we perceived a movement at the end of the central aisle, where the throne was located. And then we saw that the two Rulers had descended from the throne and were coming toward us.

A lane formed rapidly in the great throng of people, and along this the majestic couple advanced with quiet dignity. A few paces from us they stopped and raised both hands, with open palms toward us. "Welcome, strange friends!"

It was as if they had spoken in our own language, so clearly did my mind receive the thought behind their words.

Following my companion's example, I also raised both hands in their manner, also attempting as gracious a smile as our hosts gave us. To our great embarrassment and embarrassment both embraced each of us in turn, and touched their lips to our foreheads.

We were unable to say anything.

The greetings over, the exalted brother—such was his official title, we learned later—took the professor's left hand and led the way to the throne. His fellow Ruler, a woman of transcendent beauty and grace took possession of my left hand in like manner, and we followed.

From every side the people seemed to greet us with brotherly acclaim and smiles of welcome. It was indeed a triumphal procession. I walked as though in a dream. The glorious woman at my side emitted a perfume like that of roses, subtle and delicate like the scent of a dewy rose at sunrise.

It was wonderful, almost intoxicating, and from her hand there passed to me a current of magnetism that was intensely delicious, causing my entire entity to vibrate with a strange power and awakening all that was noble in my soul.

What a marvelous world, I thought, and how marvelous this human perfection of the flower-decked people all about me. It was as if I were the hero of some wonderful romance, walking to the altar with my beloved princess. Past great metallic shining ornamental columns of immense height, unfathomable in the all-pervading strange violet light, and presently I became conscious of music, soft, sweet and entrancing, like the wind sweeping gently over the strings of ancient seolian harps.

We were upon the platform, facing the people, who were gazing up at us in expectation. Perfect silence reigned, even the soft music seemed to have ceased. We two earth dwellers were between the royal pair, standing at the outer edge of the throne-altar.

With exquisite courtesy, the exalted brother spoke to us: "Strange friends, in the name of our people we beg of you to tell us where is the land you call home, and in what manner you have appeared so mysteriously among us.

"We saw you first as indistinct luminous shapes, and then you gradually took the forms of men.

"Tell us, are you men or spirits?"

EVERY eye in that immense assembly was riveted on us. At my earnest urging, the professor began to explain the manner of our appearance there.

It was strange but just as we readily received their thoughts, by means of the invisible waves, so they quickly understood us. Apparently the high vibration of our semi-spiritual bodies made this possible and natural. Words were merely a matter of form and sound.

When Professor Winter had finished, the Ruler turned to us with a radiant face. "It must be a wonderful world to which you belong. Can you return to it as easily as you left it?"

Professor Winter gazed at me in a distinctly deprecating manner, and spread out his hands in an expressive gesture of helplessness. "That, Exalted Brother, is something I do not know." He indicated me with a respectful wave of his hand as he continued: "When I began this experiment with my honored friend I did not anticipate such an amazing success. I never dreamed that we would be liberated from our physical bodies and consequently made no arrangements for such a contingency." The gaze he directed toward me was expressive of deep regret as he finished:

"I am now extremely sorry for having placed my friend in such a predicament!"

With a smile that must have expressed my deep content, I waved his regret aside. "Don't worry about me, old chap, I am perfectly satisfied! Never in my life have I imagined such wonderful surroundings, and such a delightful situation. I have no family ties, and like yourself, will not be missed in that dreary old world of ours."

The man of warlike appearance greatly relieved. The Ruler smiled approvingly. "I, Elch, wish to commend both of you for your courage! In like circumstances there are few who would show the same degree of courage; and——" here he turned to his companion, "—I am certain that my dear sister Eskara will concur with me."

The beautiful, angelic woman at my side smiled sweetly and nodded. The light from her radiant blue eyes caused my pulses to beat with a rapidity I had never experienced before in all my life. My whole body tingled and glowed with exaltation.

Both the professor and I bowed in recognition of the generous praise.

The next minute our hosts conducted us down from the throne, and again we passed along the great central aisle through the human host of beautiful, veiled people until we came to an immense semi-circular portal, resembling the great outer doors of

some of the cathedrals I had seen in Europe. A moment later we passed out into a garden of enchantment.

At last I had a very definite conception of what the fabled garden of the Olympians must have been. And there above us, was our old friend, the sun, apparently the same, yet shining with less glare, and emitting only moderate heat.

Great shady trees were all about us. Some resembled palms, with immense leaves about twenty feet long, and the width of a man. Some were like the banyan trees of India with many trunks, graceful as the exquisite columns of the Alhambra of Spain, creating avenues under their great leafy domes of emerald, where promenading was delightful.

There were also other trees, and shrubs, too numerous to mention. And the flowers! Some of these were the same fragrant white blossoms with which the people were decorated and which our guides wore; others resembled immense orchids, variegated, and exhaling a perfume like heliotrope.

Hundreds of varieties abounded everywhere, set off exquisitely against the blue-green grassy moss which covered the ground like a deep soft carpet, over which we passed without a sound.

I noticed no flies or other insects, but at intervals, like the flashings of exquisite gems, brilliantly plumed birds passed over the flowers and through the foliage overhead.

I turned to view the place whence we had emerged, and an exclamation of amazement escaped me, which startled my three companions. I looked at Professor Winter and pointed. His gaze followed the direction of my hand, and he also uttered a cry of amazement.

The great auditorium was located on an immense cliff of a white marble-like stone, which by some wonderful, incredible feat of sculpture, had been formed into a gigantic bust of a beautiful woman, perfect in every detail. It was stupendous, and we two earth dwellers could only stand there and stare, lost in admiration of the titanic work of art.

A host of musical soft laughter aroused us from our contemplation. Eliot and Eshera were gazing at us smilingly. The soft harmonious voice of the latter caressed my ears.

"You are gazing upon the likeness of Seimara, first woman Ruler of Abania, our country, dear friends."

Professor Winter expressed himself in an enthusiastic manner, and praised the colossal, yet exquisite, work of art, while I concurred most heartily.

"There is nothing to compare with it in our world!" he emphasized.

I nodded. "The sphinx of Egypt compares with it as the moon to the sun, both in size and in beauty; the great pyramid of Gizeh could be placed within the superb head and leave enough room for an army."

The two Rulers were greatly pleased with our expressions of appreciation. Eliot explained:

"Thus do we honor our best beloved ancestors, by using their likenesses for our most sacred shrines, our homes. Since many generations this has been the custom of our people."

WE PASSED on and presently came to a sort of circular parlien, built of a marble-like semi-transparent stone, and covered by a great hemi-

spherical dome of emerald-hued transparent substance.

The great dome rested upon an exquisitely sculptured entablature, supported by a great number of slender graceful columns. In the center, under the emerald roof, a marvelously executed group of two nude maidens formed from an alabaster-like substance, caught our eyes the moment we entered the cool interior.

The two figures stood back to back, and their sweetly smiling faces were raised upward to where upon their elevated hands they supported a great bowl of tulip formation from which a great fountain of water shot upward fully forty or fifty feet, curving outward and downward in an immensely enlarged form of the bowl, and falling in a refreshing aromatic shower into the wide crystal basin beneath.

Winding our way through the myriad fountains on the edge of the great crystal basin. Courteously our hosts bade us to be seated upon the circular bench which surrounded it, and which permitted one to refresh his feet in the cool water beneath. Quickly the professor and I removed our shoes and emulated the example of Eliot and Eshera, his sister.

Eliot emitted a peculiar high tone, and immediately two beautiful maids appeared. One of them bore a crystal tray with a basket woven from a gold-like metallic wire, from which several different kinds of aromatic, beautifully colored, strange fruits peeped forth temptingly.

The other held a tray of golden metal, upon the artistically engraved surface of which stood four vessels, shaped like large eggs standing on their ends with the large portion cut off, and the lower part supported in tripods of metal, like transparent gold.

With her own hands, Eshera took one of the vessels from the tray and presented it to me, while her brother offered the other to the scientist. Hesitantly I received the delicate container from my beautiful hosts and placed my lips to the edge of the fragile transparent vessel that seemed to be made of the finest white porcelain imaginable. Carefully I tasted of the cool, slightly effervescent liquid and found it marvelously palatable and refreshing. A wave of new strength seemed to course through my body from it, and involuntarily I smacked my lips as I finished the last few drops.

In courteous terms I expressed my appreciation and was just about to ask how the beverage was made, when suddenly we heard distant cries as of fear, and a commotion outside in the garden.

Eliot and his sister rose quickly and gazed in alarm toward the entrance. A moment later a young Abanian rushed in, sank to one knee and bowed, with his left hand placed over the heart and the right flat against the forehead.

"Exalted Brother, the Phoenians are coming!" he reported and there was suppressed excitement in his voice.

The Phoenians! I felt some calamity at hand; and the suddenly stern face of Eliot confirmed it. So even this paradise was not without its snakes. I gazed at Eshera. She was calm, and her eyes were fixed upon her brother's face with quiet confidence.

The latter made a sign for the messenger to rise. "Bid Alam to come immediately!" he commanded.

The man made an obeisance and sped away.

"Who are these Fluorians, Exalted Brother?" Professor Winter inquired.

Eloë folded his great arms across his wide chest and his face was very grave as he explained:

"The Fluorians are a terrible enemy, a lower race than ours, who hate us because of our progress and our harmony among ourselves. Occasionally they enter into ruthless warfare against us; often they come in the night and carry off our women and children. Come! Every minute counts now!"

We passed out of the pavilion and just outside of the entrance were met by a powerfully-built martial-looking Alutan. This was Alan, chief of the Alutan army. He bowed deeply to the two Rulers. "I await your orders," he said simply.

Eloë spoke rapidly: "Are the warriors ready?"

Alan inclined his head. "They are now forming for the defense."

"And the women and children?"

"They are being rushed to the top chamber."

Eloë nodded. "It is well, I shall lead in battle myself," he stated sternly.

Then turning to Kalara, he placed both hands on her shoulders and his eyes radiated a world of tender brotherly love as he spoke gently: "Sister beloved, do you go and comfort the women and children, and pray to the Great Ruler of the Universe for strength in our bodies and power to overcome the evil will of the enemy."

They embraced tenderly and kissed each other upon the cheeks. After taking leave of myself and the professor, she walked rapidly away, with such grace and lightness that she seemed to float.

After having received several rapid orders Alan hurried away also. Eloë turned to us, and there was genuine sadness and regret in his eyes.

"Friends, I am very sad that this trouble had to occur to mar the pleasure of your visit among us! Let us hope and pray that ours will be the victory."

Both the professor and I fervently seconded his wish.

"Come," he said, "I shall lead you where you will be safe, and whence you can witness that which shall take place."

He led us swiftly back to the great human edifice, past the wide portal. From the outer gate in the high garden wall a steady stream of women and children flowed toward the palace, to disappear through the wide portal into the interior.

They were coming from the city outside of the palace walls which we had not yet seen. Some of the women were calm, some excited and some evidently frightened. But most of the children appeared to enjoy the prospect of war and excitement.

As we learned later, there was a great inner stone staircase which led to the top of the immense stone figure, into the head of it. Just at the level of the gigantic eyes was a vast observation chamber; and it was into this that the women and children entered for safety's sake. The bottom of the stone stairway was, in times of danger, closed by means of a huge block of stone and could be opened only from within, so that the inmates were safe as long as their water and food lasted. The eyes of the head served as windows. These immense apertures, by the way, were the only window openings in the entire colossal edifice.

A SHORT distance from the main entrance Eloë stopped. We were facing a smooth wall. He touched a certain spot, and to our great surprise a large block of stone swung outward as if on hinges, disclosing a narrow stairway beyond. Embracing each of us in turn, the Ruler pointed to the stairway.

"This stair leads to the chamber of Lodin, nam of wisdom. He will explain to you many things. Go in peace!"

We entered, and immediately the stone door swung back into place. We began to mount the stairs. The illumination here was the same peculiar soft violet light that we had first observed in the great auditorium of the palace.

Search as we would we could not discover the source of it.

"It must be some sort of radio-activity that generates it," my companion observed.

I nodded. "Quite possible! Besides, do you notice the peculiar invigorating quality it possesses?"

He said that he had observed the same thing.

Here the stairs made a sudden turn, and a moment later we found ourselves upon a narrow stone balcony formed by an ornament around the neck of the gigantic head, just under the chin.

Immediately we became absorbed in contemplation of the strange panorama spread out below us.

Far below the stream of humanity was still pouring into the palace grounds; the women and children passing on, and the men forming into battle formation at each side of the main avenue. We observed many touching scenes of leave-taking.

And then on either side of us we saw the city!

Never could I have imagined anything so fantastic!

Picture to yourself, if you can, a great multitude of the most exquisite gardens, and in the center of each the marvelously sculptured bust of a beautiful woman or a handsome man; and at intervals two of them together.

A movement in the palace gardens below attracted our attention; With difficulty I removed my gaze from the wonderful, now deserted city.

The army of the Alutans were marching out of the great outer gate to meet the enemy. Quickly, marching ten abreast, they moved out over the immense moss-covered plain fronting the palace. Far away, on the other side of the plain was dense forest. And from this forest, while we watched appeared a dense, dark mass which we soon learned were the Fluorians.

My gaze turned again to the thousands of stalwart Alutan warriors, and presently the conviction struck me that there was something strange about them. For a few minutes I puzzled about the matter, then suddenly I had the answer.

I turned to my companion. "Professor Winter, do you not notice something strange about those soldiers, who go out to meet the enemy?"

The keen eyes of the scientist concentrated upon the Alutans, and he emitted an exclamation of surprise. "By Jupiter! You are right, Barion—there is not a single weapon on any of them."

I nodded. "Exactly! That is what struck me as being so odd; so unusual to our terrestrial minds. What under the sun do they fight with?"

"You shall see in good time, friends!" A deep, vibrant voice uttered the words immediately behind us.

We turned quickly in surprise, and beheld, regarding us with a benevolent smile, a venerable old man, who had stepped from a chamber, the narrow door of which we had not before noticed.

It was Loafio, man of wisdom. His long wavy hair, white as freshly fallen snow, hung down over his back. He was dressed in a long white robe that came to his bare ankles. His face, which in common with all other Alamanians was hairless, bore such a sublime expression of benevolence and sanctity, that I experienced the involuntary desire to kneel down before him and ask for a blessing. His deep blue-gray eyes and wide high brow indicated the student and thinker, and gave me the impression of infinite wisdom. His mouth was firm but kindly, and one looked in vain for any weakness in his face.

His feet and head were bare, and across his chest, suspended by a golden chain, he wore the same glittering ornament in the shape of two outspread wings that distinguished the two Rulers of Alania.

He extended a hand to each of us in hearty welcome, and I felt a strong flow of force from his hand into my body.

The welcome over, he continued his explanations: "You will find that there are more powerful forces in the universe than the weapons of war on your plane, which I see depicted in your mind, and which bruise and tear the body."

With a wave of his hand he again turned our attention to the field of the coming battle.

Although the distance to the ground where the two opposing armies were approaching each other was about five miles, the atmosphere was so marvelously crystal-clear that distance seemed annihilated and we could see almost every detail with perfect distinction.

But Loafio, with exquisite courtesy, handed to each of us what appeared to be a mirror with a thick back. The instrument was constructed from a light silvery material, and the lens was of perfect quality. He waved his hand toward the battlefield. "Observe well!" he suggested.

Following his directions the professor and I held up the instrument between us and the vista before us. I heard the amazed exclamation of my companion. And no wonder! With a clearness that surpassed that of any optical instrument I had ever seen on our plane, the lens recorded the far scene as if we were within a few feet of it.

THE Alamanians and the Phonians! No greater contrast could be imagined. While the Alamanians were white-skinned, fair-haired, and blue- or gray- or gray-blue-eyed, the Phonians were dark-skinned, some almost black, black-haired, and their eyes of the color of jet.

While the Alamanians were beautifully proportioned as to body, and handsome as to features, the enemy were of heavy, unwieldy build, unduly long arms, and their bestial faces were covered with short bristly black hair.

Their long arms, crouching walk and hairy over-muscled bodies and faces resembled the larger simians of our own world.

Both races, however, wore only kiln-cloths, and neither had any weapon.

A veritable battle of angels and devils.

The enemy had formed into a great semi-circle, with the ends directed against the Alamanians. The

latter, on the other hand, advanced in the form of a capital "V", the apex of which pointed at the center of the enemy semi-circle.

The man of science and I watched in fascinated suspense and expectation their manner of battle.

Gradually the Phonians drew closer, the mirrors in our hands revealed their ferocious visages distinctly, while their wild clamor in all its brutal harshness and savagery was carried to our ears by the light wind. Ever faster their gait became as they advanced, until at last they broke into a trot.

We could now observe that at the center of their formation their ranks were tripled, thinning down gradually toward the horns of the semi-circle.

Our friends the Alamanians had stopped, and were grimly awaiting the attackers with apparent placidity, leaning slightly forward with all the muscles of their splendid bodies tense.

I thrilled at their heroic composure, and a glance at my companion showed that he was no less impressed.

The charging of the Phonians had ceased. They were coming on at top speed. The impact of the two armies was terrible. A dull roaring crunching noise that sent the shivers up and down my back. But the apex of the Alamanian "V" had penetrated the black semicircle.

And then followed the most fantastic battle—if such it could be called—that it is possible to imagine.

Almost perfect silence reigned. There was no wrestling, beating or slugging. That is what made it so indescribably unreal to our terrestrial minds.

This is what occurred:

A black warrior would spring like a tiger upon a white warrior; or a white upon a black. They would grapple, and then seemingly become motionless in each other's fierce embrace. Only the quivering muscles on the great bodies indicated the terrific strain of the combatants.

They stood there, motionless like some sculptured work of art, apparently doing nothing more than gazing intently into each other's eyes until at last either one or the other would release his hold and slip lifeless to the ground.

It was uncanny! I could not understand it. And yet I knew there was some terrific force in action there on the battlefield. What was it?

Then suddenly I remembered the words of Loafio the wise. The same thought must have struck Professor Winter also, for almost simultaneously we turned to the old man for an explanation.

The man of wisdom watched the strange conflict with stern eyes. Seeming to read our thoughts, and without removing his gaze from the field of battle, he explained:

"You see there the mighty powers of one mind pitted against the powers of another. It is the force of the concentrated, intelligently directed will that decides the issue."

"Will power, directed in a certain way, becomes more deadly than the knife or other weapon of your world. Many generations ago, as the ancient records show, a man on our plane also used the generally accepted weapons to carry on war. But long ago the race on this plane have relinquished the use of them."

"The warrior possessed of the stronger will-power

is able to overcome an opponent, just as the physically stronger man overcomes the weaker."

"First the functions of the intellectual, or great brain are stopped, and thus the channels of communication between the outer world and the soul, by means of its five physical senses, are closed. Next the barriers of the middle brain are broken down and thus the muscular action of the body is paralyzed.

"Finally, the lower brain is overcome by the downward sweep of the force which radiates from the mental battery of the opponent, and thus the nerve system is under his control. The heart action is arrested at the will of the conqueror, and immediate death is the result."

He stopped and regarded us seriously, to see if we had understood.

Professor Winter, whose eyes were aflame with scientific interest, nodded understandingly. But I shook my head in helpless confusion. Whereupon he explained:

"As far as I can gather, the process of this strange method of warfare is a sort of super-hypnotism! No doubt you have read about the mesmeric and the hypnotic processes?"

I nodded affirmatively.

"Very well, there seems to be this difference: The mesmerist, or the hypnotist, on your plane finds it impossible to influence his subjects without their cooperation, willingly given, or by rendering them passive by a sorfide. A person in the full and conscious possession of an active will cannot be hypnotized nor mesmerized.

"Here, however, we have a very active, especially trained will confronting the would-be dominator. Here is no passive state, or cooperation of any sort. On the contrary, here is a very intensively active will, itself intent upon conquest.

"All the tremendous powers of each mind are simultaneously concentrated in the effort of overcoming the resistance of the other, and we see strong powerful men succumb to the superior powers of their opponents.

"Therefore we have here an entirely different, and infinitely more powerful form of mental domination and dominion than known on our own plane; no doubt subject to different laws of nature entirely."

The explanation given by the man of science, corroborated by Loahio who had listened attentively, was enlightening. I marveled at the tremendous possibilities of the thing. A person killed merely by the concentrated merciless will power of another. It was terrible!

We turned our attention again to the scene of conflict, and noted to our joy that the whites were unmistakably gaining. A great many more black warriors than white were lying on the ground.

Slowly but surely the Alaman apex pushed farther toward the center of the enemy. The great "V" stretched itself out, and its wings gradually curled about the ends of the Phoenician semi-circle.

SUDDENLY Loahio grasped my arm and pointed. His eyes were shining with interest, and anticipatory triumph.

At the very center of the two opposed forces two gigantic figures were swaying in the terrible embrace of death, one white and one black. Quickly

the professor and I focused our mirrors upon the pair. One of them was Eloh, Ruler of the Alaman; the other Urson, King of the Phoenians.

Close to chest they stood, the brilliantly blue robes of Eloh flaring into the black, redly flaming eyes of the hunched breast-faced black Ruler; their terrible wills in unconceivably intense action.

It seemed like a desperate conflict between the forces of light and darkness, good and evil, angel and demon.

Which of the two would win that battle of terrible psychic forces?

A slight, scarcely detectable swaying of the two great bodies was the only motion, the only visible sign of their mutual efforts, physically and psychically.

Watching them, my muscles involuntarily became tense, and my breath came in gasps out of sheer sympathy with the great white Ruler.

Owing to the lack of motion, the battle was more exciting than a wrestling match or a fistic contest could have been, because of the great tension, which one instinctively knew existed between the two foes. Such a state of things could not possibly last long.

And indeed it did not.

Slowly, very slowly the pure dominating power of the white king, fighting for justice and right, prevailed over the power of evil in the black king.

Realizing his waning power Urson made a desperate effort to withdraw his gaze from the blinding relentless supple eyes of Eloh, turning his head far, far backwards. But fight as he would, with all the mental power at his command, he could not check the gradual domination of his cranial functions. The mental power of Eloh seemed like a keen sword which cut off his sensory channels one by one from the outer world.

Presently his muscles became inactive; and finally the dread power swept downward into his primary brain, dominating the nerve system. Then the end came soon.

Suddenly his head dropped to one side, showing the glazed sightless eyes. The great dark body shuddered convulsively and slipped out of the arms of Eloh to the ground. Urson was dead.

A great cry of rage and fear went up from the black warriors as they realized that, with the death of their king, the battle was lost for them.

A greater shout of triumph sounded from the lips of the white warriors.

From the dark forest beyond a great blast, as from an immense horn, sounded. Immediately each Phoenian who was able to do so tore himself from the embrace of his white adversary and fled toward the forest. But many were taken as prisoners.

The battle was over. Behind us Loahio raised both hands to heaven and gave silent thanks to the great Ruler of the universe. Reverently, with bowed heads, the professor and I waited until he had finished. Presently he led us down the stairs and into the palace garden again, and we walked toward the great portal of the auditorium.

Standing in regal grandeur on the throne platform, just at the edge of the top step, Loahio, man of wisdom, awaited the triumphal procession that approached the throne. The noble lines of his face expressed sublime happiness and benevolence.

The procession approached along the wide easter aisle, singing a grand psalm of joy. First came

Elohi whose left arm encircled the waist of Eshara, his sister. Next followed Alam, the chief of the army; then a group of his officers, and behind them came the warriors, accompanied by their wives, sweethearts and other relatives.

The whole thing, viewed by the professor and me, at either side and a little distance behind Loahio, was indescribably thrilling.

At the foot of the throne, the two Rulers stopped, and the song ceased. Loahio raised his arms and held out his hands over them in blessing. With inclined heads, and in the vast silence, they listened, as in deep melodious tones, the voice of the wise man rolled out in thanksgiving.

The ceremony over, the happy people filed out of the great auditorium, while I and Professor Winter hastened to express our felicitations to Elohi. With Loahio leading, we passed from the throne room into a magnificent banquet hall. Behind us, Alam, chief of the army, and four of his officers, followed at a respectful distance.

The vast apartment was at least one hundred feet long, about half as wide, and as neatly as I could judge, thirty feet high.

There was little furniture, but the decorations on the walls and ceiling gave eloquent proof of the high artistic ability of the Abanians. On the ceiling, gamboling children, exquisitely carved, and painted in lifelike colors, were chasing birds of brilliant plumage.

WE passed on to the very center of the room where a massive oval table, covered with a pure white damask-like cloth, was laid for ten persons, and beautifully adorned with flowers in original artistic designs. Before each place was a large golden plate, and one of the exquisite, delicate goblets we had already seen in the garden. No knives, forks or other tableware were visible.

Behind each one of the ivory-like finely carved chairs was stationed a beautiful servant girl, who, at our approach, pulled back the chairs for us.

Loahio had passed to the head of the table. While we stood there at our appointed places, he first raised his hands heavenward in a gesture of supplication, and then he spread them over the table in blessing.

The simple ceremony over, we seated ourselves.

Immediately, from a curtained alcove, there sounded delightful, soft music, evidently from string instruments. And at almost the same time the beautiful servants began to bring us fruits, and a sort of delicious wafer that literally melted on the tongue, with the same sort of invigorating drink that had been served to us earlier in the garden.

The fruits, some of which resembled our kinds on the earth-plane, were delicious. There were no hot foods, nor meats of any kind. Evidently the Abanians were thorough vegetarians.

And in one other respect the meal was quite different from any similar function in our own world: There was no conversation during the meal. The badinage, repartee and social chit-chat that we know would have been decidedly out of place among such ideal surroundings.

However, there was not the slightest indication of stiffness of any sort. Instead, it was with a very decided feeling of comfort and well-being that the meal progressed.

At the professor's side Elohi, the ruler, ate his fruit with quiet serenity, while at my left Eshara delighted me with her nearness. Evidently Professor Winter and I had been given the places of honor.

As a sign from Loahio, the music ceased. He turned to us with a smile, and said, "Friends, I am ready now to answer the questions which I see in your minds."

The scientist's face became eager at once. He waved his hand about the vast apartment. "I greatly desire to know by what method and process it was possible to carve such a wonderful dwelling out of the living rock. Do you also use explosives as we, the earth dwellers do?"

The wise man did not understand the professor's term, "explosives," whereupon the latter proceeded to explain as best he could.

When my companion adventurer had finished, the former sat silent a few moments in thought. Then he gave a quiet command to one of the maids, who departed quickly, and a few minutes later ushered in four strong men who between them, in a sort of sling, carried a great block of stone which they placed upon a small round but strong table that one of the servants had pushed between the professor and the wise man.

When the carriers had departed, Loahio reached forth his right hand and touched his index finger to the stone block. His face was quite calm, but from his eyes seemed to radiate terrific power. And even as I watched in amazement, the stone changed its form.

It seemed to grow larger and a mistiness seemed to surround it. Then, when the mistiness had disappeared, I gazed in utter stupefaction upon the perfect sculptured likeness of my friend, Professor Winter. The whole process had not taken more than two or three minutes. It was unbelievable; and I rose and touched the stone bust to make certain that it was not an optical illusion.

The others had watched me in amazement. As for my companion, he was the intensely interested scientist. Immediately he turned to Loahio for an explanation of the phenomena.

With a grave smile the wise man complied.

"As you probably know, there exist four life elements in Nature, the electro-magnetic, the vitæ-chemical, the spiritual, and the soul element."

Professor Winter nodded and his eyes gleamed with interest.

Loahio continued: "The first of these elements controls the mineral world, the first and second combined the plant world; the first, second and the spiritual element combine in the animal, and all four of the elements compose the human entity.

"What I have done with this stone is simply due to my control of the electro-magnetic element. It is just as easy to disintegrate the rock in the same manner. Watch!"

Again he stretched out his hand toward the stone. Quickly a cloud of mist formed about it, becoming thicker and thicker, until it formed a sort of cloud about ten times the original size of the stone. Slowly it lifted from the table and gently floated to the floor. Quickly the cloud phenomenon sank down, thinned and disappeared, leaving on the floor an area of about one square yard, covered with thick white dust—the composing particles of what had been a huge stone.

WHILE I stared at Loelio in awe, the professor rose quickly, walked over to the disintegrated stone dust and rubbed some of it through his fingers. He nodded, satisfied, and explained to me: "This powder is finer than the best mill could possibly grind it. The reason is that the stone has been disintegrated and separated into individual molecules."

"But how?" I was utterly bewildered.

Regretfully, he shook his head. "That I do not know, but—here he bowed respectfully to the wise man—"—some day I hope to learn the method."

Loelio nodded gravely. "It is possible, my friend; but the attainment of control over Nature's forces requires many years of intense study, perseverance, and practice. Very few attain this power; for to most people it is too difficult a problem to solve, requiring as it does perfect self-control and the living of a life in strict accordance with Nature's Constructive Principle."

He rose from the table and all of us followed his example. While the officers bowed deeply and left the banquet hall to go back to their duties, Loelio led the way into an adjoining chamber which proved to be the music room.

There were several string instruments somewhat resembling the ancient lyres of the Greeks, and some were similar to the large harps on our plane, with the exception that the strings ran horizontally instead of vertically. In the center of the great room stood an instrument which resembled nothing which I had ever seen in our own world.

It was a great tripod, fully seven feet high; the legs, very heavy at the bottom and tapering at the top, were composed of a semi-transparent substance like topaz. At the top the legs were fastened to a triangular plate of a white metal, and at the bottom, to a similar but far larger plate. Through the centers of these two plates, and rigidly attached to them, passed a metallic rod; thick at the bottom and gradually tapering to the size of a man's small finger. Ranged on this rod, according to size, one above another, were a great number of triangular metallic plates, beginning large and thick at the bottom of the instrument and ending in small ones of wafer-like thickness at the top.

Eklara, who had led me by the hand, invited me with sweet courtesy to be seated upon one of the comfortable divan-like chairs, and walked to the tripod. With two slender wooden rods, she began to play it.

Instantly the chamber was filled with exquisite tones of perfect harmony, a strange melody, arousing all that was good and poetic in my soul. Eklara played with delicate touch and deep feeling, giving forth waves of wonderful symphony, which raised my soul to a condition of veritable bliss.

Even Professor Winker, scientist that he was, seemed spellbound by the music. And Loelio and Eklara sat there in visible deep contented reverie as the waves of harmony caressed their ears.

When the beautiful player had finished, both the professor and I hastened to express our enthusiastic appreciation.

Soon the conversation devolved chiefly upon Professor Winker and Loelio. From what the wise man said it appeared that:

There were many nations on the sub-infra plane, most of them white and advanced peoples. The rest, to which the Placotians belonged, were primitive and dark-skinned.

At the head of each white nation were two chosen Rulers, a man and a woman who ruled jointly. The male Ruler was chosen by the men of the nation, the woman by the female citizens.

They were selected because of their superior wisdom, purity of character, and their true sense of equity, justice and right. Sometimes, as in the case of Eklara and Eklara, it happened that the two Rulers were chosen from the same family.

Every three years a great competition was held at the capital of each nation, at which all the most advanced citizens of both sexes participated. They who excelled in all the intellectual and moral tests were chosen as the next Rulers. Often the present rulers were chosen for a second term.

At each period of nine years the supreme intellects from all the white nations, Rulers and others, assembled in the central capital of Orth. There the supreme test was held. Whoever passed it were chosen as the central Rulers for a period of nine years. To them all the other white nations looked for guidance and counsel. The central Rulers were also one man and one woman, with exactly equal powers in their individual spheres of activity.

In case that one of the Rulers should die before the expiration of his term, the next highest intellectual was chosen until the next election.

The paramount duty of the Rulers was the intellectual, spiritual, moral and psychic evolution and progress of their peoples. There was no industry and commerce as we on our plane understand them. The needs of the people were few.

Their climatic conditions, too, differed from ours; it was always mild summer weather. The necessitated few clothes, which, very likely, partially accounted for the complete absence of any sickness. They were all strict vegetarians, and each family grew sufficient fruits and vegetables for its own needs.

Only when something needed to be done for the common good, or for the Rulers, did the whole nation join forces. An inherent sense of duty and love made them see to the needs of each other.

The servant problem was met in the same way. All the servants in the palaces of the Rulers were there voluntarily for a period of one year, unless they desired to stay longer. The only medium of exchange was personal service.

THESE people produced many fine artists and craftsmen. There were no churches. This was a country of monotheists who believed in an invisible, omnipotent and loving Ruler of the universe, whom they worshipped at intervals in the palaces of their Rulers, as we had seen.

Birth was the same as on our plane.

At last death was mentioned. And right here we heard something very strange. It answered the unspoken questions in my mind about the dead left on the battle field. I had not seen any of them brought in, and had seen no preparations for their burial; so I had wondered.

The strange fact that Loelio mentioned in this connection was that the body of a person after death did not decay—it literally evaporated. As soon as the life-element was withdrawn from the body at the time of death, the strange chemical process of nature began, until, at the end of about one of our hours, the body had completely disappeared.

They believed that after physical death, the soul clothed in a finer body, passed into a finer higher world.

"It is a material world like this," explained Loash, "but of finer matter, and infinitely higher vibration."

The advanced wise men like Loash, who was an ex-central healer, were of such high spiritual development, that they could communicate with the next world with full consciousness, while still in the physical body and in full possession of their will and voluntary powers.

They believed that the evolution of man is practically an eternal process, that the soul in ever refined bodies ascends from plane to plane until it reaches an ultimate condition of perfection.

One point Loash made very clear: that it is impossible for the individual soul to find self-completion or perfection alone; in order to reach that high state of being, the perfect vibratory union of a masculine and a feminine soul is absolutely necessary.

As Loash said: "That is the reason why we devote all of our best energies to the development of the true love nature. We bring up our children by implanting the germ of love deeply into their minds. Not only individual love, but altruism as well.

"We teach them from the very beginning how to control the destructive passions and impulses of their physical natures, and how to re-direct these impulses into constructive channels. It is this which has made possible the abolition of war among the white peoples on our plane."

What a wonderful world we would have if we could reach such a point. No more wars, no more suppression of the peoples by the powerful. No more hatred between classes, for there would be no classes; no more grafting, stealing, murder or other transgressions; no more high taxes to pay for war debts and for armament in preparation of new wars. It would be glorious to see the end of crime, court-houses and jails.

Here Eahara read my thoughts and asked:

"Is it then such a terrible world from which you come? Surely not all the people there are bad. I am sure that both of you are good men! Are there not many such? Are not your women good?"

We assured her that there were more good than bad people in our world, and that our women formed the main moral foundation.

And then to my own great astonishment, Professor Winter told them that he had heard of wise men on our plane who lived holy lives and could control the forces of nature; how through their control of nature's forces they could create things, make flowers grow from seeds in a few minutes, and so many more strange things. These wise men were in every country, living secluded lives and pursuing their studies in secret; making every effort for the good of humanity.

Then, to my intense embarrassment, Elol turned to me with a smile. "It seems, my friend, that you doubt the existence of these holy men and their powers on your own plane!"

And now, gazing from one to the other of the three exalted Alabians, I knew that they had easily read my skeptic attitude of mind, of which I had been but semi-conscious.

I made an apologetic gesture. "I am sorry! But my mind seems to be of a quality which cannot accept as a fact anything that I have not personally experienced or demonstrated."

Elol asked one of the maids present to place upon the floor before us a golden earth-filled pot and a seed from one of the flowers in pots, which, with their wonderful coloring and perfume served to adorn the fine apartment.

HE turned to me. "Not to entertain, but to instruct you, shall I demonstrate to you that these things are possible." He bowed, with deep respect, in the direction of Loash. "Our Supreme Exalted Brother has demonstrated to you his control over the electro-magnetic forces of Nature. I, his deeply grateful pupil, shall demonstrate to you that control over the next higher, the vito-chemical element, in combination with the lower, is possible."

His right hand, with the index and second fingers extended, pointed to the seed in the golden plate, while he concentrated upon it with fixed intensity.

And even as we watched intently, a little cloud of luminous mist seemed to surround it, becoming rapidly larger as it rose into a column several feet in height. Gradually within the mist phenomenon the faint tracery of a flower plant appeared!

At first it was very faint, but it rapidly became more and more distinct until, no more than two minutes later, the misty light phenomenon cleared away, and there before us, in all its beauty, covered with a multitude of fresh aromatic blossoms, stood a magnificent flower bush.

I rubbed my eyes and pinched my leg to make sure that it was not an illusion. Then, while our hosts watched me with smiling sympathy, I exhibited the example of my fellow-adventurer, who had broken off one of the flowers, and was examining it with intense interest. There was no doubt about its genuineness, but I was not entirely satisfied, so I touched the flower bush with my fingers, and followed it all the way down to where it disappeared into the soil. So hard is it to overcome prejudice and bias. But I was convinced at last.

Marvelous! I could not find adequate terms to express myself. I gazed at Eahara; and then I stared incredulously, for sweetly smiling at me, she was fast becoming invisible, a mere transparent wash, until, quicker than it takes to tell, she had completely disappeared.

I turned to my other three companions in bewilderment. The professor was staring with scientific analytic interest at the chair which the queen had but recently occupied. I was about to formulate a question, when, following the smiling gaze of the two exalted Alabians, I perceived Eahara seated in her place just as visible as she had been before the experiment, and smiling at me with a warmth that went straight to my heart.

"You seem very much surprised, dear friend."

I was, for never had I imagined the possibility of such miracles.

"And yet—" she said earnestly—"these are nothing but visible demonstrations, showing that the laws of Nature can be used and exercised by those who have developed and unfolded the faculties, capacities and powers of the soul. You and your friends—" her graceful gesture indicated the professor—"can do these things that we have done, if you will but comply with, and live according the constructive laws of Nature."

But it was not the end of wonders yet. Eahara

waved her hand respectfully in the direction of Loash. "Watch!"

The venerable master rose and with both hands traced an outline in the atmosphere, beginning at the height of his eyes and tracing downward with a stroking motion a number of times.

Gradually a large oval form appeared in the air before him, luminous and tinted with all the colors of the rainbow. Rapidly the oval form became more dense, apparently drawing together and concentrating, until the outlines of a human form became visible.

Again I sensed the light of intense mental and spiritual power radiating from the eyes of the man of wisdom.

And then, even while we two earth dwellers watched in utter fascination, there suddenly stood before us, smiling at us sweetly, the form of a maiden of eighteen summers.

To the rhythm of inaudible music she began to dance in the most graceful manner imaginable. Faster and faster she danced, until soon she spun dizzily on one slender toe.

And then, even as she had appeared, she resolved back into the mysterious nothingness from whence the master had called her.

IT was a beautiful rest room to which we had been personally conducted by Elloh and Eshara. The atmosphere within reminded one of the refreshing scent of a pine forest.

In common with all other apartments in the immense edifice, the chamber was very spacious and almost devoid of furniture, other than two very comfortable couches and a table, exquisitely carved from some rare wood. The walls of the room were painted with wondrously artistic realistic depicings of trees, flowers and birds that seemed to live.

The peculiar feature in all these chambers of the palace was the lack of windows, or any other exterior openings. Yet the light and ventilation were perfect.

When the two Rulers had embraced us in true brotherly fashion, and bidden us to rest well, the professor and I sat down on our couches and digested the many strange happenings of the day. And long after I heard his first breath of deep sleep, I was still awake. The day had been too crammed with unbelievable adventures to allow of sleep.

I began to think about the Phusionian prisoners. I had not seen any of them, but Alam, the chief of the Alaman army, had casually mentioned that they were confined somewhere in a subterranean chamber of the palace.

Presently the overwhelming desire to inspect the prisoners took possession of me. Very quietly, so as not to awaken my companion, I rose and left the room.

The passage in which I found myself led to a wide descending stairway. On past the corridor below, in which the banquet hall and music room were located, I went. Just below this corridor the stairway developed into a spiral.

It was strangely still in the palace. Not the slightest sound could be heard, and my footsteps, however lightly I tread, seemed unnaturally loud. No doubt everyone was asleep.

At last I came to another passage, more like a tunnel, far underground. And as I entered it, I experienced a sudden dread, but with angry pride I sup-

pressed the emotion as childish. Boldly I entered the long passage.

Carved out of the solid granite, no doubt with the wonderful magic of Loash and other wise men, this passage seemed to lead into interminable dim distances, illuminated by the ubiquitous violet radiance. At regular intervals doors on both sides led to unknown regions.

I passed on and suddenly was sensible of the presence of living beings somewhere close by. I was opposite a heavy door of metal. From beyond it harsh, animal-like sounds, guttural and menacing, came to my ears.

I should have turned back then, but the devil of curiosity within me persisted. Cautiously, I placed my hand upon the massive latch and pressed down. With a slight grating sound, the heavy metallic door swung open. The next moment I staggered backward with sudden fear.

For there, from behind the grating of thick metallic bars, the face of a green-eyed devil stared out at me, terrible, repulsive; a Phusionian prisoner.

Ashamed of my temporary fear, I summoned all the courage at my command and faced the ape-like hairy savage, beyond whose body I could see the forms of others of his kind—grunting, ferocious, animal-men.

A voice of warning within my consciousness bade me slam the outer door and go back to my couch above. But I would not listen.

The flaming green eyes of the Phusionian at the grating attracted my gaze with the force of a magnet attracting iron particles. I felt a rapidly increasing numbness in my brain, my senses began to reel. In a flash it came over me that the savage was exerting his terrible volitional force to overcome me. With all my remaining will-power I struggled desperately to resist the dread influence sweeping over me.

But it was of no avail. I felt myself slipping rapidly. And then, like a white-hot bullet into my brain, came the mental command of the Phusionian: "Open the grating!"

Dimly I realized that I must not yield, must not carry out that command. But seemingly without my volition my body responded. Like an automaton I raised the heavy bar of metal that closed the grating from the outside.

Suddenly I felt myself flung aside with resistless force, as evil-smelling bodies rushed past me, hairy, horrible. I had the sensation of being picked up—then blackness descended upon my mind.

WITH the sensation of regular rhythmic motion, consciousness came back to me. I was lying across the shoulders of a huge Phusionian, broad hand and foot, who carried me without apparent effort. All about me was the guttural growling, and the soft tramping of many bare-footed men. We were passing through dense primeval forests. Through occasional openings in the heavy foliage far overhead I glimpsed the rosy sky, and knew that it was early morning.

And then, as from my recumbent position I gazed about cautiously, I saw that which turned my heart and soul sick with horror. For there, just a few feet ahead of me two of the savages carried a sort of hammock which depended from the strong long pole on their heavily muscled shoulders, and from that hammock protruded an arm of ivory whiteness, most

beautifully modelled, and a long slender hand that I would know anywhere.

THE WOMAN IN THE HAMMOCK WAS EALARA!

Ealara the beautiful, a prisoner of the semi-human savage Phonians! God! What had I done! Bitterly I regretted my damnable curiosity. But right there and then I resolved to save Ealara no matter what the cost.

The cords on my wrists and ankles hurt terribly, but that pain was as nothing compared to the torment in my soul. No doubt she was asleep when the savages had attacked her, because as Eloth had explained to us, psychical domination through the power of will is far easier during sleep, for then there is no active will to overcome. Perhaps it had been the very savage who had dominated me, and had induced me to open the prison, who had overcome her. He was unquestionably a leader among the Phonians, and therefore more powerful mentally than the others.

Hours passed, and still the steady tireless march of the animal-men continued. And ever my gaze returned to that white, beautiful arm protruding from the portable hammock ahead of me, swinging like a pendulum, listlessly, until I thought that I should go insane.

From the occasional glimpses upward through the dense foliage I knew that it was broad daylight. And yet, in the depths of that strange, dense primordial forest, a sort of perpetual twilight prevailed.

Despite my soul torment I must have fallen into a dose, from which I awakened as we neared our destination. From ahead, savage guttural cries and piercing yells assailed my ears.

Presently we entered a clearing, at the foot of a high black cliff wall, along the base of which I perceived a number of irregular openings, the largest being near the middle.

In a moment we were surrounded by a great mob of nude savage children of all ages, and sullen semi-nude Phonian women, who stared at me fiercely, though there was something akin to awe in their touch of my clothes.

The huge savage who had carried me tossed me to the ground like a sack of meal. The impact jarred every bone in my body, but it cleared my head and quickened my brain. Disregarding the mob of savages crowding about me, I exerted myself tremendously and managed to sit up. Thus I was just in time to see the hammock, with Ealara, being carried into the largest cave opening.

"Dear God!" I prayed in my heart,—"help me to remedy the evil I have done; aid me to free Ealara!"

I was lying, or rather sitting upon a white crystalline ledge of rock that somewhat seemed familiar to me. I allowed myself to sink down again, twisted about, and touched my tongue to it experimentally. As I had guessed, it was potassium nitrate, but of such purity as I had never seen on the earth plane.

At this moment the savage who had carried me, returned, roughly pushed the crowd of women and children aside, and cut the bonds from my ankles with a short stone knife which he carried. He jerked me brutally to my feet and pushed me ahead of him toward the main cave.

Several feet within the entrance a great double curtain of very heavy cloth obstructed our progress.

My guard parted the curtains at the middle and pushed me through, following at my heels.

Involuntarily I recoiled, stepping hard on the toes of the Phonian behind me, who emitted an animal-like yell, for the intense red luminosity of the place seemed to me for a moment a conflagration.

The immense cave had been hollowed out by the hand of Nature, and only in a few places was there any sign of the touch of man. The walls had been tinted with a luminous, bright-red substance as far up as the eye could see, and this was accented a thousandfold by hundreds of fiercely burning torches that threw an intense red glare. Everywhere, on the walls and on tall metallic holders, the red torches hissed and spluttered and glared, illuminating a scene truly infernal, bellic.

WITH a fierce growl, my guide pushed me forward violently, so that I almost fell. And now, as I walked forward tottering, I became conscious of other things in that vast cavern—

A huge crowd of Phonian warriors were assembled about a great throne of a yellow, dully gleaming substance, shaped like a huge square block, upon which sat a powerfully built savage, cross-legged. With the exception of a broad breechcloth of slaty cloth and fiery red color, and a sort of turban of the same material, he was nude.

Behind the throne, sculptured out of black stone, its large, fiery eyes of a substance akin to ruby, squatted a gigantic idol, staring straight ahead with terror-inspiring monotony, its triangular tongue of crimson protruding several inches from the horrible gash of a mouth, its unspeakably hideous face grinning, grinning—a veritable nightmare.

Just below the throne was a wide stone platform, and on this my searching eyes perceived the motionless white figure of a woman. "Ealara!" I cried and attempted to rush forward.

But with a crushing grip, my guide grasped my shoulder and flung me to my knees. "Down, worm!" he bellowed. "You are in the presence of Turam, son of Uuon that was, King of Phonian!"

Timidly I raised my gaze to the bearded, sinister presence above me and met the brooding, fixed stare of his flaming, reddish eyes, the menace and evil in which seemed quivers of terror to travel up and down my spine.

With a tremendous effort of will, I managed to remove my gaze from the terrible fascination of the flaming eyes, and again contemplated the inert form of the white queen on the platform.

My heart throbbed sick within me at my absolute helplessness. She seemed dead; and only by means of concentrated attention, could I discern the almost imperceptible rising and falling of her bosom.

Suddenly I was conscious of a deep, rolling, thunderous voice above me. Turam was speaking to the assembly of savages who pressed all about me, now seating me with the odor from their filthy, hairy bodies.

"Warriors!" he began. "To-night, Phon, the great spirit of our race, commands that I be crowned king in the stead of my father who is no more!"

He paused, and his glittering gaze fixed itself upon the body of Ealara, greedily, rapaciously, obscenely. He pointed to her, and his evil, fiery eyes challenged his creatures as if he expected opposition. "At the celebration, she shall become my slave! And

he—"pointing to me, "shall be sacrificed in the fire to Phao! I have spoken."

His great, hairy fist crashed down upon a sort of drum that stood by his side, and his challenging stare swept once more over his warriors. "Let him who objects speak!"

But thunderous semi-animal-like shouts of approval burst from a thousand savage throats as the warriors slapped themselves upon their hairy chests with a terrifying noise for emphasis.

Amidst savage laughter, my guide jerked me brutally to my feet and dragged me into a sort of grotto, immediately adjoining the central cave, where he flung me to the rocky floor, cut the remaining bonds on my wrists, and left the place.

For a long time I remained where I had fallen, too miserable to move; my heart burned within me with the terrible realization of the extent of the evil I had committed out of curiosity, and my absolute helplessness to remedy matters. I loved Rukal Loved her with every fibre of my being; and the thought of doom filled me with utter despair.

I sank to my knees, and prayed with an intensity that I somehow felt would bring results. With a new hope and renewed strength I rose to my feet, just as one of the Fluennies entered with a huge platter of food, and a stone pitcher of some liquid. He placed the food upon a block of the same yellow substance of which the throne in the main cave was composed, grinned at me evilly, and walked out.

With a sudden realization of my hunger, I attacked the food. It was evidently bearded venison, accompanied by a sort of thick, white, roasted root, that in taste resembled a potato. At first I ate rather reluctantly, but when I found the food surprisingly palatable, I literally gorged myself, washing it down with an occasional draught of water.

While I was eating I noted that the stony block which served me as table and chair simultaneously rocked back and forth with my movements. Glancing down, I observed that small pieces had been broken off from its lower edge from contact with the harder stone floor of the grotto. Casually I picked up one of the particles and examined it. There could be no mistake—it was native sulphur of great purity.

And suddenly as I was staring at the sulphur in my hand there flashed into my mind a plan of escape that left me fairly gasping with excitement, for in a flash I remembered the potassium nitrate outside, which in combination, would give gunpowder. If I could obtain some of the nitrate, and charcoal—

In college, I had been fairly good at chemistry and had been quite successful with my experiments. I remembered the formula for gunpowder distinctly. I stealthily crept toward the entrance of the grotto, which was connected with the central cave by means of a sort of tunnel in the shape of an irregular capital L; the short part being toward the grotto. Cautiously, I peered around the turn. Just inside of the outer opening, so that he could see what was going on in the main cave, a huge, bestial Fluennie stood guard.

His back was toward me. Silently I crept back into the grotto. With a dim hope, I began a tour of exploration. The grotto was very irregular, formed from the black cliff of evident volcanic origin, with many ramifications. It seemed discouraging, just as I was about to give up hope, my dili-

gent search was amply rewarded, for in the narrowest of these branches of the grotto, I came upon a fine outcrop of the nitrate.

With the aid of my dinner knife, I managed to break off a large quantity of the mineral and carried it to a dish-like cavity in the stone floor, which acted as my mortar. In a few moments, I had found an oblong piece of rock that was suited for a pestle. Reversely, I set to work grinding the nitrate to a fine powder.

DURING my grinding operation, I began to devise ways and means for obtaining the requisite amount of charcoal. At one side of the grotto was a sort of heavy mat, woven from grasses. No doubt this was to be my bed. I concentrated upon this mat, determined that it should furnish me with the necessary amount of charcoal. There were two flaming red torches against the walls of the grotto. At intervals, glowing pieces dropped from them to the floor, where they remained in a glowing state for quite a while. Quickly I walked over and pulled the mat squarely under one of the torches.

How many hours I worked, I do not know, for I lost all sense of time. But I now had many pounds of powdered nitrate and sulphur, and through careful manipulation, nearly the entire upper side of the straw mat was reduced to charcoal.

I was completely exhausted. Wearily, I dragged myself to the mat, turned it over so that the charred surface was under me, and stretched out on it to rest a little. When I awoke with a start hours later, I found that another meal had been served me while I slept.

I ate voraciously, and as soon as I had finished my meal, I began the milling operation again. Several times I crept to the turn in the passage to spy upon my guard and found that at intervals of several hours new men were at the post. Evidently they were certain I could not escape, for not once did anyone enter the grotto to see what I was doing. I praised heaven for that.

Suddenly a weird feeling came over me, as if an unseen presence were approaching. And even as I stared incredulously before me, there formed a tall, oval fog-like phenomenon, growing more luminous every minute. I sprang to my feet and retreated in alarm. And then, as I watched in amazement, there quickly materialized before me, out of thin air—Loelle.

He smiled benignly and extended his hands toward me in a reassuring gesture. "Fear not, my friend! I have come to aid you." He pointed to himself. "As you no doubt understand, this is not my physical body, even as yours is not. As master of the laws of nature, I am able to have my physical body wherever I choose, and can travel to any distance and there clothe myself in a temporary body, composed of electro-magnetic and vito-chemical substance, which is everywhere."

I marveled. What wonders were possible to the soul of man! Then I quickly acquainted Loelle with the vital facts of the case, and showed him the half finished gun-powder. He smiled gravely and gently shook his head. "There is no need for that. There are greater forces than chemicals that are changed into gases through fire or percussion."

He walked over to me and touched my forehead. Immediately I seemed to expand all over my body,

and experienced a far greater buoyancy than any I had yet possessed. I glanced down at my body, and with a shock realized that I was again invisible, as on the day before, when Professor Winter and I had entered into this strange world. But in a few moments my vision had become adjusted to the higher vibration of my body and I could again see both my own body and that of Leaho, who had again made himself invisible to ordinary vision.

With a sign, he invited me to follow him. We passed right by the guard of the groins unnoticed.

It was no doubt evening when we entered the main cave, like two invisible spirits.

Turum was being entertained. At the foot of the sulphur throne a large crimson cloth had been spread on the stone floor, and the most conspicuous thing on this improvised table was an authentic wooden platter, placed in the very center, in which lay an entire huge ox-like animal, evidently freshly roasted, for it was smoking hot.

At each end the great feast was flanked by smaller platters containing smaller roasts, and there were still other huge dishes containing heaps of the thick white boiled root that I myself had eaten; and there were many other unknown edibles in great quantities. Great jugs of stone contained liquid refreshment.

In the middle of the spread, with his back toward the throne, Turum presided. At each side of him and surrounding the cloth, his warrior chiefs were enjoying themselves; everywhere about the immense chamber similar but simpler spreads were placed for the rest of the warriors—at least two thousand.

Table manners were evidently unknown, for they were feeding like a pack of hungry wolves. Their method was simple. The warriors grasped a convenient corner of the roast in front of them with one hand, while with the stone knife in the other they hacked off whatever they deemed immediately necessary.

And while the meal was in progress there was music and dancing. And such music! And such dancing! Seated cross-legged, crouching like great crabs, and in various recumbent positions, the bearded warriors fed and watched the show.

At one side, to the right of Turum, was a high stone platform, and on this, accompanied by a horrible discordant blaring noise which could hardly be called music, were seven men and seven women, swaying, whirling and gyrating in a series of motions and postures that were vile and obscene.

The orchestra, composed of reed pipes, great animal horns, and various kinds of drums, was seated at one edge of the platform. If anyone can imagine the combined noise and barbaric discord of a large Chinese orchestra, a dozen Scotch bagpipes completely out of tune, and a few African tom-toms, he can about imagine the effect.

The whole scene, the musicians, the glittering hairy bodies of the dancers, the feeding warriors, the guttural deep ape-like tones of approval and shouts of delight, and the crimson bright light tinged everything with a blood-red color, might well have represented a part of the infernal regions.

That horrible crowd resembled the legendary demons of hell, as no other creatures could have done.

Only a few minutes we stood there contemplating the nauseating spectacle. Then my venerated companion touched my arm and pointed to the throne of sulphur behind the savage king.

I looked and my heart leaped. For there upon the great block of sulphur, bedded on shining crimson cloth which vividly accentuated her angelic whiteness, I saw the object of my adoration and love—Balara.

UNSEEN and unheard by the savages we quickly approached the throne, and bent over her with anxious concern. Apparently she was still in the grip of the hellish power which during her sleep had robbed her of her consciousness and self-control.

With a shudder I realized that she would be held thus until she had become the plaything of Turum star very night. Leaho bent down and touched her forehead with the tip of his fingers of his right hand. With great joy I soon realized that he rendered her physical body invisible to the savages. Both he and I, however, could see her spiritual body, just as we were able to see each other.

And even as I picked my love up in my arms at the command of the wise man and carried her toward the entrance, a great shout went up from the Plebeians. They had suddenly discovered that their fair prisoner was missing from the throne.

In a moment the place was in an uproar, an inferno of sound.

Agitated and driven on by the terrible booming of Turum's voice, a frantic search was begun, extending to every nook and corner of the vast cavern. Torches were torn from their fastenings in order to facilitate the hunt for the missing royal prisoner.

And through it all, strong in our invisible condition, Leaho and I quickly made our way to the screened entrance. We had barely reached it when a sudden thought evidently struck Turum, that in some unaccountable manner the royal fugitive might have made her way out of the main entrance, for his bellow directed the searchers in that direction, himself leading.

Leaho suddenly raised his arms upward with a waving motion. For a moment there was a terrific atmospheric tension. Then, when the savages were within a few yards of the entrance, a sudden avalanche of rock descended upon them with a terrific roar, burying them from our sight. A wild horrible yell from a thousand savage throats, and then—silence.

As we stepped out into the open, the venerable master touched the rock at the side of the entrance. Again I witnessed the phenomenon of rock changing into a cloud of floating molecules, light as breath. The cloud phenomenon, now luminous, covered the entire entrance. Quickly it grew more dense, and when the luminosity disappeared, I stared in awe.

Where a couple of minutes before had been a great opening, a solid smooth wall of hard impenetrable rock confronted us.

From the many smaller caves a multitude of older men, women and children emerged, streaming toward the former opening to the central cave. And even as we, invisible to them, moved away, the air was filled and made hideous by their piercing animal cries and shrieks of astonishment, fear and hatred when they saw the solid rock closing up the former entrance and simply realized perhaps that something strange and terrible had entombed their king and his warriors.

Leaho gazed at them a few moments and his

face was stern as he spoke: "It was a terrible thing to do, but I had no choice in the matter. They would have declared war against Almasia at once, and perhaps thousands of innocent people would have had to suffer."

I was still carrying my unconscious love in my arms, and was wondering if Lasho would awaken her from her trance before we continued on our way, when he stopped and looked at me. "Fear not what you are about to experience, but trust me utterly!"

Without hesitation, I nodded in acquiescence. He placed his right arm firmly about my shoulders, and again his face assumed the fixed intent expression of intense concentrated mental power.

The next moment I felt myself rising high into the air, and traveling with inaccessible speed.

According to terrestrial time the phenomenon endured barely more than a minute or two. I distinctly got the impression of dark forests, open spaces and rivers receding beneath me in a blurred, lightning-like procession, but was not conscious of wind or impact against the air. And then—suddenly, I felt solid ground beneath my feet. I landed softly as down once more in the garden of the palace of Almasia.

Elsho and Professor Winter evidently had expected our coming, and greeted us with sincere delight. They wanted to relieve me of my precious burden, but I insisted on carrying Balara myself into her own simple chamber of rest, where Lasho broke the evil power which had held her in its grip.

Suddenly she opened her wonderful eyes, and gazed in bewilderment, first at me and then at the others. A smile transformed her face into transcendent beauty as she raised herself to a sitting posture.

"What has happened? Why are all of you acting so strangely?" she inquired. Evidently she remembered nothing.

And then it was that I sank to my knees, and with humbly bowed head, told of my curiosity and its fatal consequences, and begged her pardon for my contemptible lack of self-control.

Softly she placed her hands upon my bowed head, and her voice was like the sweetest music in my ears. "My dear, dear friend, it was but a passing weakness on your part. Who am I to condemn you for it?"

When at last I dared to raise my head and gaze timidly into her eyes, I saw such a light of tenderness and love radiate from her eyes, that I forgot everything but my great love for her, and on the crest of the tidal wave of my emotion, I swept her, a very willing prisoner, into my arms. Only then did I realize that the others had left us to ourselves.

Never had I imagined such rapture and deliciousness as I experienced in those never-to-be-forgotten moments.

At last I knew, as an eternal truth, that which the wise men of humanity the masters of the law, have thought for ages: that complete happiness can be attained only when two perfectly attuned souls of the opposite sex meet and are united by a bond everlasting, a bond that a thousand deaths could not break, a union indissoluble and eternal. At last I had found my soul-mate.

How long we were there in that embrace of utter bliss, I do not know—it might have been minutes,

it might have been hours, days or eons. Then suddenly an unutterable darkness descended upon my mind, and I had the sensation of falling, falling through a limitless void; I seemed to hear the cry of my love's fear from an infinite distance, and then—oblivion.

"BARTON! Barton! For God's sake answer me!"

The words seemed to come from a vast distance, and I became dimly aware that someone was shaking me violently. With all my power of will I struggled to throw off the lethargic laden heaviness that enthralled me soul and body.

With a tremendous effort I finally managed to open my eyes to see the anxious face of Professor Winter bending over me. With his help, I managed to sit up, and stared about me in a daze.

With a shock it suddenly came to me that we were in the scientist's library. I had been lying on the floor in front of the great mechanical chair from which I had started on my strange voyage to the land below the infra-red, from which I had evidently fallen to the floor.

On the other side of me, supporting me with trembling hands, was Summer, the old factotum of the professor, whose staring eyes and pale face indicated that he had passed through an experience of intense fear.

What had happened? In some unaccountable manner we had been suddenly re-transferred from the delightful land of Almasia to our own drab and prosaic world.

"Thank God that you are all right!" exclaimed my friend fervently as he drew a deep breath of relief. "For a minute I was terribly afraid that your cardiac action had stopped," he added.

"What—what on earth has happened?" I stammered feebly, while they helped me to a comfortable chair. I was still very much confused mentally because of the sudden change.

The scientist seated himself at my side and explained gently. "You say—there was a severe electrical storm. The lightning struck one of the main transmission lines and burned out several of the primary transformers at the nearest sub-station."

"Naturally this put the whole station out of business, with the result that all the current was cut off, and the apparatus here stopped." He pointed to the silent machinery on the two tables and continued:

"As the machines slowed down, the vibrations of our physical bodies in the chairs here decreased in proportion, and came back gradually to normal, which variation in turn was transmitted to our spiritual bodies on the sub-infra-red plane by means of the invisible cord of magnetism which ever connects the physical and spiritual bodies until death itself disrupts it."

"Now then, of course the more normal our vibrations became, the more we withdrew from the ether plane of existence, and the closer we approached our terrestrial plane again. The attraction between the physical and spiritual bodies increased gradually until the soul, ensouled in its spiritual body, entered into its earthly shell again, and—here we are."

I nodded in slow, and comprehension. "And so we are back again in the human dream existence of our own dreary world." With a sudden mental wave

of misery I buried my face in my hands and groined aloud with disappointment. "And just as Ealara, my wonderful soul-mate and I——" My voice broke and I could not finish.

My companion placed a gentle comforting hand upon my shoulder. "Dear friend," he began, with the deep, full tone of genuine sympathy in his voice. "I understand! But I promise you, upon my honor, that as soon as I have prepared a paper for the Society of Physical Research, covering our experiences upon the plane of the sub-infra-red in detail, we shall again venture into the delightful land of the Abnans, our wonderful and wise friends."

With renewed hope in my heart at the thought that I would soon be with Ealara again, I went home. Strange how heavy and uncouth my physical body felt after the delightful lightness and buoyancy of my spiritual body, encased in its covering of sub-infra-red matter!

At an early hour the next day, my telephone rang wildly. I was still in bed. Sleepily I lifted the receiver. Summer was on the wire, his voice quivering and trembling with deep emotion and grief.

"Mister Barton, please come at once! Professor Winter is dying!"

I was awake in an instant. "Did I understand you to say that my friend was dying?" I cried horrified.

"Yes, sir, it is true; Doctor Evans is with him now!"

In a voice choking with emotion I promised to come at once. With lightning speed I began to dress.

I could not bring myself to believe what I had heard. When I had left my friend the day before, he had seemed to be at the maximum of health, strength and energy, mentally and physically, enthusiastic at the prospect of preparing the papers of our adventures for the Society of Physical Research and now——

Summer, who was visibly agitated, led me straight to the professor's bed-room. Doctor Evans, an elderly and highly capable physician, the life-long friend of Professor Winter, was seated at his bedside when I entered.

My scientific friend gazed up at me with a brave smile as I leaned over him and silently took his hand.

"Well——" he began, in a faint voice, "——it seems that the old heart was not able to stand the strain after all. The attack came suddenly, about two hours ago. I had been up all night, arranging notes for my manuscript."

He indicated the doctor with a feeble gesture, and his lips twitched humorously. "Frank here sees it's extreme valvular incompetence. I suggested putting in new valves as you would into an automobile, but he did not seem willing. So I suppose it means that the old heart is going to stop soon."

Appalled, I stared at the doctor, who answered my mute question with a sad nod of his head. "I have done all I could. I warned him some time ago, but he would not listen."

The dying man spoke to me again, but his voice was much feebler, and there was earnest, deep appeal in his eyes as I bent down to hear his last words.

"Barton, before I pass on to the higher world to continue my studies of the mysteries of nature, I want your promise to do me a very great favor."

I nodded with ready acquiescence. "Certainly! Gladly."

He smiled with relief. But I had to bend close to his mouth to hear. "Then, since I cannot do it myself, will you promise to acquaint humanity with our experiences in your own way?"

I nodded silently, and gave him my hand to emphasize my promise. I felt his feeble, grateful grip. And a few minutes later, still retaining his grip on my hand, his great fine soul passed out from its terrestrial shell, to enter upon his greater, finer, and more lofty labors and duties in the world beyond.

THE STATEMENT OF DR. EVANS

A SHORT time after the demise of my dearly esteemed life-long friend, Professor Carl Winter, his servant, Carl Summer, who, pending the settlement of the professor's estate, had been left in charge of the latter's residence, called me up on the telephone, and begged me to hurry over to the house, as something very terrible had happened.

When I arrived, Summer, who was in a mental state bordering upon collapse, conducted me to the library, where I found Mr. John Barton, a friend of the professor, with whom he had conducted some secret experiments of importance, seated in a large chair of peculiar-mechanical construction, in an attitude which at once indicated to me that he was dead.

He had on a head-dress which resembled an aviator's cap, with exceptionally heavy goggles. A number of wires ran from the front and sides of the cap to a complicated apparatus at his right hand, upon a table of very massive construction.

There were two of these chairs and mechanical tables. The old servant pointed to the apparatus, and there was positive intense hatred in his eyes and voice as he cried:

"It's a devil machine, sir! And it killed both Professor Winter and his friend!"

My immediate thorough examination corroborated beyond all doubt my first conclusion that Mr. Barton was really dead.

Summer, upon being questioned, stated that Barton had that day come and had immediately gone to the library. A few minutes later the old servant had heard him start the machinery on the table. Having a premonition of disaster, he had crept to the closed door and had tremblingly listened.

Suddenly there had been a loud shriek from the machinery, and a terrible groan from Barton. Wrenching open the door, Summer had rushed inside and had pulled out the main switch on the wall, which he knew controlled the machinery. But he had been too late. Something had gone wrong with the machinery, and it had cost Barton his life.

The very next day I received a bulky registered package by mail from Barton, dated a day earlier. The package included a manuscript and a letter which explained many things.

Evidently Barton knew that he was going to his death, for he had left his entire fortune to charity, and before his fatal experiment, had written the entire manuscript, in compliance with the dying request of my friend, Professor Winter.

In his letter to me, Barton requested me to publish

I have carried out the request as a sacred trust.

to both Barton and my dear friend, Professor Winter, and must let the world judge the merit or demerit of the case.

(Signed) FRANK EVANS, M.D.

THE END

ROBUR THE CONQUEROR

By Jules Verne

(Continued from page 847)

there by several peaks, lost in the snows that bounded the horizon.

Leaning against the fore-cabin, so as to keep their places notwithstanding the speed of the ship, they watched these colossal masses, which seemed to be running away from the atonelf.

"The Himalayas, evidently," said Phil Evans; "and probably Robur is going round their base, so as to pass into India."

"On that immense territory we shall perhaps be able to—"

"Unless he goes round by Burmah to the east, or Nepal to the west."

"Anyhow, I defy him to go through them."

"Indeed!" said a voice

The next day, the 28th of June, the Albatross was in front of the huge mass above the province of Zang. On the other side of the chain was the province of Nepal. These ranges block the road into India from the north. The two northern ones, between which the aircraft was gliding like a ship between enormous reefs, are the first steps of the Central Asian barrier. The first was the Kuen Lun, the other the Karakorum, bordering the longitudinal valley parallel to the Himalayas, from which the Indus flows to the west and the Brahmaputra to the east.

What a superb orographical system! More than two hundred summits have been measured, seventeen of which exceed twenty five thousand feet. In front of the Albatross, at a height of twenty-nine thousand feet, towered Mount Everest. To the right was Dhaulagiri, reaching twenty-six thousand eight hundred feet, and relegated to second place since the measurement of Mount Everest.

Evidently Rohu did not intend to go over the top of these peaks, but probably he knew the passes of the Himalayas, among others that of the Ganderu

which the brothers Schlegel and Schlegel traversed in 1856 at a height of twenty-two thousand feet. And towards it he went.

Several hours of palpitation, becoming quite painful, followed; and although the rarefaction of the air was not such as to necessitate recourse being had to the special apparatus for renewing the oxygen in the caenis, the cold was excessive.

Robert stood in the bow, his sturdy figure wrapped in a great coat. He gave the orders, while Tom Turner was at the helm. The engineer kept an attentive watch on his batteries, the acid in which fortunately ran no risk of congelation. The scow, running at the full strength of the current, gave forth a note of intense shrillness in spite of the low density of the air. The barometer showed twenty-three thousand feet in altitude.

Magnificent was the grouping of the chaos of mountains! Everywhere were brilliant white summits. There were no lakes, but glaciers descending ten thousand feet towards the base. There was no herbage, only a few plantainiums on the limit of vegetable life. Down on the lower flanks of the range were splendid forests of pines and oaks. Here were none of the gigantic ferns and interminable parasites stretching from tree to tree as in the thickets of the jungle. There were no animals—no wild horses, or yaks, or Tibetan buff. Occasionally a sacred gazelle showed itself far down the slopes. There were no birds, save a couple of those crows which can rise to the utmost limits of the accessible air.

The pass at last was traversed. The Albatrosses began to descend. Coming from the hills out of the forest region there was now beneath them an immense plain stretching far and wide.

Then Robur stepped up to his guests, and in a pleasant voice remarked, "Ladies, gentlemen!"

END OF PART 1

Discussion

In this department we shall discuss, every month, topics of interest to teachers. The editors solicit correspondence on all subjects directly or indirectly related to the studies appearing in this magazine. In case a special personal answer is required, a carbon for the editor is also necessary. In case there is no answer, the editor is not responsible.

AN INGENUOUS CRITICISM REGARDING FREQUENCY OF OTHER WAYS

Elder, Amazon Striped

I am an interested reader of your *Amazing* column, and yet to take up too much of your valuable time, I will be brief.

In the story, "Around the Universe," by Ray Cummings, the author tells us that we cannot see the high speed effect of his Space Flare on the reflections of light.

If the rate of red vibration is to that of violet as 4:15, a speed of 150,000 miles per second would cause the light coming from stars we reach by using the ultra violet scale, and the light of the world.

[illegible]

Var. *obtusicauda* (L.) 240,000,000 miles per second

the author has the stars about open up and eyes
are and close up again behind

At that time, and a quarter past, the Chinese didn't know what the intended relations would be in the chairman and premier's first and supposed to be some kind of a treaty or a treaty or a treaty or a treaty.

For the next trip Cummings might fit up a spectrometer and all the spectrometers and a definite gravitational indicator might serve to indicate the means more exactly and of course.

W. F. Winkler, Downsville, Ia.
(Continued on p. 202)

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[illegible]

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[illegible][illegible]

All this talk of moving in the past and the future is fallacious. The theory seems to be that just as we see the tails of some hundreds and perhaps thousands of years after those have come out, we can catch the tail by the hand that just happened made. This does not take into account the with the passing of time and traversing of distances all waves lose their strength and are

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